INDIA RUBBER WORLD

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SEPTEMBER 1, 1928

Faultless

REG. U. S. PAT. OFF.

THE FAULTLESS RUBBER COMPANY

(ASHLAND RUBBER WORKS)

ASHLAND, OHIO, U. S. A.

Manufacturers of

Rubber Sundries; Water Bottles; Syringes; Surgical Rubber Goods; Surgeons', Household and Electricians' Rubber Gloves; Sponges; Sponge Cushions, Bath Mats and other Sponge Products; Transparent Nipples; Tubing; Finger Cots; Standard and Practice Golf Balls, Sponge Tennis and Base Balls, Play Balls; Toy Balloons; Novelties—Rubber Cigars, Cigarettes, Nuts, Candy, Eggs, Mice and Bananas, Bathing Caps, etc. Also Transparent and Translucent PURE GUM Rubber Goods made from Faultless WONDER Stocks by original Faultless WONDER Process.

Faultless

All Under These Registered Trade Names

"Wearever"

"REG U.S. PAT. OFF."

DOMINION RUBBER COMPANY LIMITED

Formerly CANADIAN CONSOLIDATED RUBBER COMPANY, LIMITED

Executive Offices—MONTREAL, CANADA

Chairman, CHARLES B. SEGER President, W. A. EDEN

Canada's largest manufacturers of Rubber Goods, including: Rubber Footwear, Automobile and Bicycle Tires, Mechanical Rubber Goods, Rubber Covered Rolls, Druggists' Rubber Sundries, Moulded Rubber Specialties, Rubber Soles and Heels, Rubber-Sole Canvas Shoes.

Twelve manufacturing plants. Twenty service branches in the leading cities throughout Canada.

CLIFTON RUBBER CLOTHING

COATED GEM DUCK and SHOE CLOTH

FRICTION TAPE
AND
SPLICING COMPOUNDS

CLIFTON MANUFACTURING CO.
65 Brookside Ave. BOSTON, MASS.

"PAHRAH" RECLAIM HIGH TENSILE LOW GRAVITY

Bloomingdale Rubber Co.
ESTABLISHED 1879
501 Fifth Avenue New York, N. Y.

Established in 1856 *Telephone 3940 Bowling Green*

H. HENTZ & CO., COMMISSION MERCHANTS

Hanover Square *Cotton Exchange Building* **New York**

Execute Orders For Future Delivery

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ON

The Rubber Exchange of New York, Inc.
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WE INVITE YOUR INQUIRIES REGARDING METHODS OF TRADING IN COMMODITY FUTURES

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New York Cotton Exchange
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New York Curb Market

BETHLEHEM, PA. BOSTON, MASS. DETROIT, MICH. SAVANNAH, GA. PARIS, FRANCE

INDIA RUBBER WORLD, September 1, 1928, Vol. 78, No. 6. Published monthly by THE FEDERATED BUSINESS PUBLICATIONS, INC., 420 Lexington avenue, New York, N. Y., U. S. A. Entered as second class matter October 5, 1889, at the Post Office, at New York, N. Y., under the act of March 3, 1879. Subscription $3.00 a year domestic; $3.50 foreign; single copies, 35 cents.

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ALLEN-WILLIAMS Tubers and Strainers

won their position as leaders in this field by pioneering. The following features, originated by Allen-Williams, are part of the story of the success of this new line:

1—ENCLOSED HERRINGBONE DRIVE — — — Lowest Power Consumption—Quiet—Cool

2—BALL THRUST BEARING — — — — — — Decreases Heat and Power Consumption

3—HARDENED AND PLATED STOCK SCREW — Longer Life Less Stock Friction

4—FULLY ENCLOSED TAKEOFF DRIVE — — — Removes All "Messy" Outside Contraptions

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Send for Catalog of RAPIDO and other high-speed machines.

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HIGH SPEED
TUBING MACHINES

AKRON-WILLIAMS A-W "PRODUCTS"

ALLEN-WILLIAMS DIVISION
EDWARD E. ALLEN & SONS
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THE WILLIAMS FOUNDRY & MACHINE COMPANY

"In Business Since 1888"

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Our special Xylos process assures manufacturers a reclaimed rubber of higher quality, greater uniformity and better compounding value.

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XYLOS 1128—A Reclaimed Rubber of recognized quality for the manufacture of Tires, Mechanicals and Sundries—Plasticity — Workability — Uniformity

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YOU may use as much softener as you please in a Safex accelerated stock.

It is of much greater importance, however, to know that you do not have to use an overdose of softeners in order to easily mill, calender and tube Safex stocks.

A deLuxe tire tread with 6% softener on the rubber content will offer greater resistance to wear than the tread with 10%.

Safex enables you to make low temperature cured goods of maximum quality with a minimum of handling trouble in the factory.

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1790 Broadway
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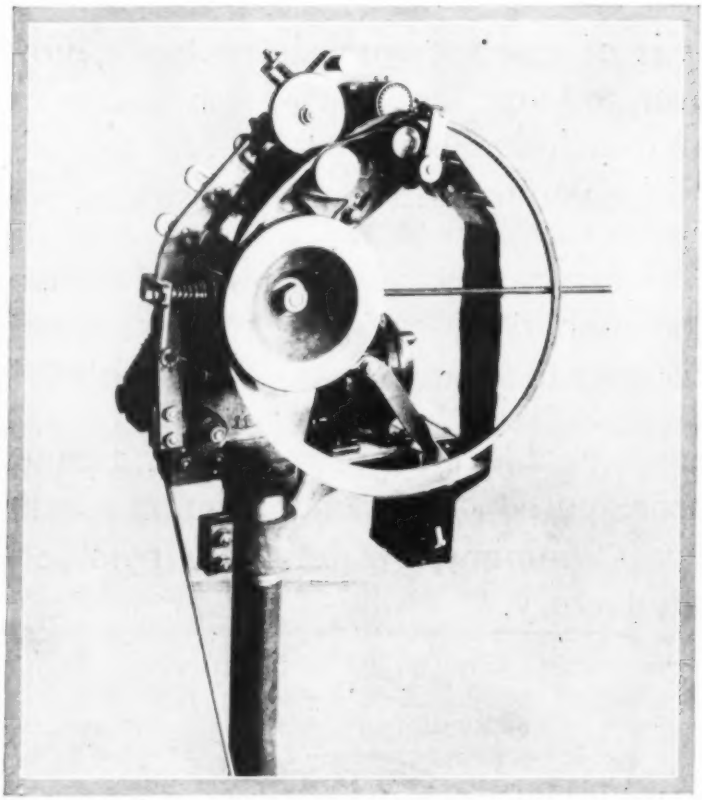
OUR LABOR SAVERS

Utility Crimper Type Bead Flipper



This is an improved type of Bead Flipper which shortens the center of the cover strip so that it meets the inner and outer circumferences without excessive distortion. This adds greatly to the strength of flipper strip.

This machine can be fitted to flip raw or molded beads.

We flip single, double or triple plies at one operation.

Send sample beads for specimens of work

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Phone: Main 3600

Registered Cable Address: Utility—Milwaukee
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Eastern Sales Engineer
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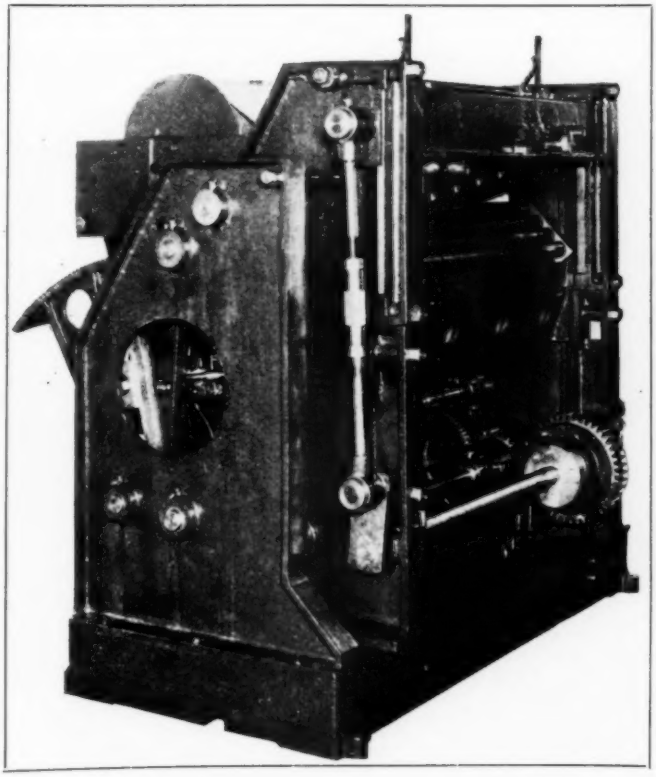
Improved Tread Measuring and Cutting Machine

Measure your treads and cut them to length on the skive as they leave the calender or tuber.

Double your calender or tuber speed.

Save the remixing of end cuttings and the labor of reweighing.



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3 Yrs. Experience Proves Them Best on the Market—

regardless of what press is used

FLYNN SHAPE C TUBE MOLDS

Flynn Tube Mold Success is Due to—

A. "C" Shape receiving part with both joints overhanging the center line of the tube. Two thirds of the tube is in the receiving part.

B. Molds cast with open backs, permitting removal of molding sand, chipping off of rough metal projections, and checking for even thickness.

C. A steam chest is then bolted on against packing to close steam chamber. This construction permits full inspection of steam chamber at any time.

D. No special compounds or building processes required.

E. Simple two part mold adaptable to any quick-acting press.

BY their ability to turn out consistently higher quality tubes, Flynn Tube Molds have won their way in tube departments. 3 years of successful, uniform quality tube making in quick acting presses of various types have proved their superiority.

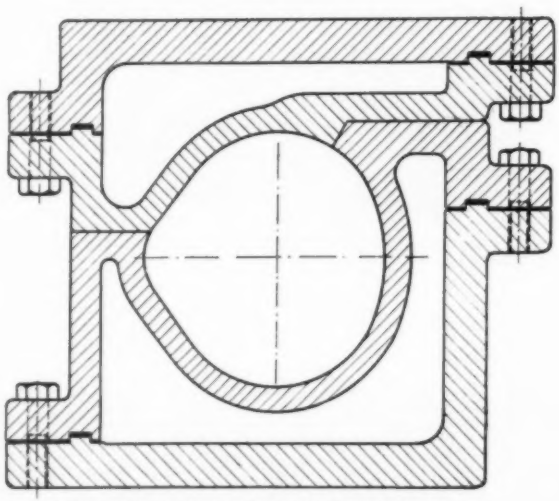
Day after day Flynn Molds are making better than 99% perfect Balloon, Truck and Bus Tubes. *And these tubes are tougher, better cured and finer appearing.* Their walls are of even thickness, close density —no rinds on the tread portion—no buffing required —valve pads and stems properly cured in the center.

Flynn Molds cost more—but users claim the difference in price is cheap insurance considering the uniform, high quality product obtained.

May we arrange a demonstration of Flynn Molds in production and show you, first hand, the high quality tubes they are making? Call or write.

The Akron Equipment Co.
E. Exchange at Annadale—Akron, Ohio

Diagram of Flynn Shape "C" Tube Mold



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THE Cabot exclusive control test now in operation in our factories, accurately and immediately detects any variation.

This guarantee of quality and uniformity is a most important step toward standardization of our customers products.

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IN ADDITION to all basic, rubber working and reclaiming machinery, we build a complete line of Hydraulic Presses, Accumulators, Rimming Presses, Tubing Machines and Strainers, Wrapping Machines, Band Cutters, Quick-Closing Vulcanizers, complete Laboratory Equipment and many other special machines. We are also well organized to design and build labor saving and highly specialized machinery for any purpose. We make gears of all kinds and in all sizes and our Iron and Steel Foundries make superior castings for any need.

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Engineers, Machinists, Iron and Steel Founders

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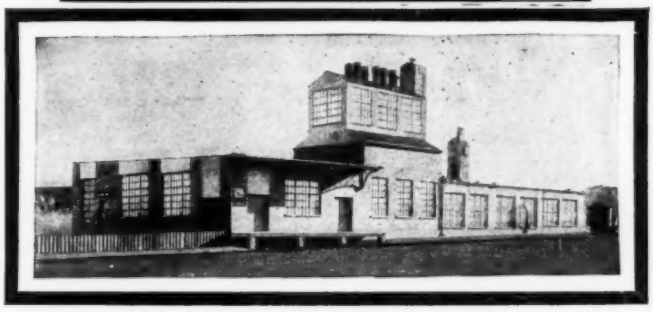

SULPHUR which attains the highest standard is now available to the rubber industry.

This dependable source, the St. Louis Sulphur & Chemical Co., St. Louis, Missouri, supplies "Pioneer" Brand Sulphur. It is a product whose qualities are amply high to meet every manufacturing requirement.

"Pioneer" Sulphur is supplied in grades of fineness exactly suited to the production standards of every group of rubber products.

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WISHNICK-TUMPEER, Inc.
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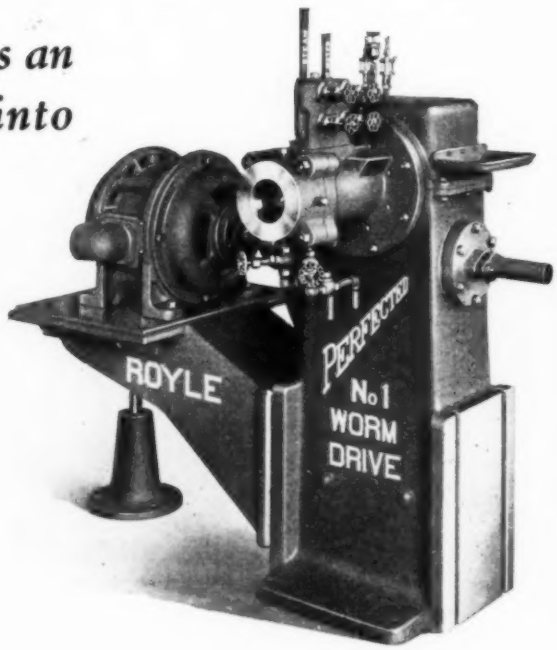
NEW YORK, 251 Front Street CHICAGO CLEVELAND AKRON MILWAUKEE TRENTON BOSTON

Royle 2-Inch Tuber in New Working Clothes

This transformation puts an already fast machine into the "high speed" class. New features include:

1. *Cleveland worm drive with oil pump and cooling system.*
2. *Large water-cooled oil reservoir.*
3. *Motor connection at either side of the machine.*
4. *Timken roller thrust bearing.*



Royle high speed tubing machines are built like machine tools. Their increased output at once justifies the extra value in a Royle. Parts and sub-assemblies are standardized and accessible. Interchangeable heads for various purposes.

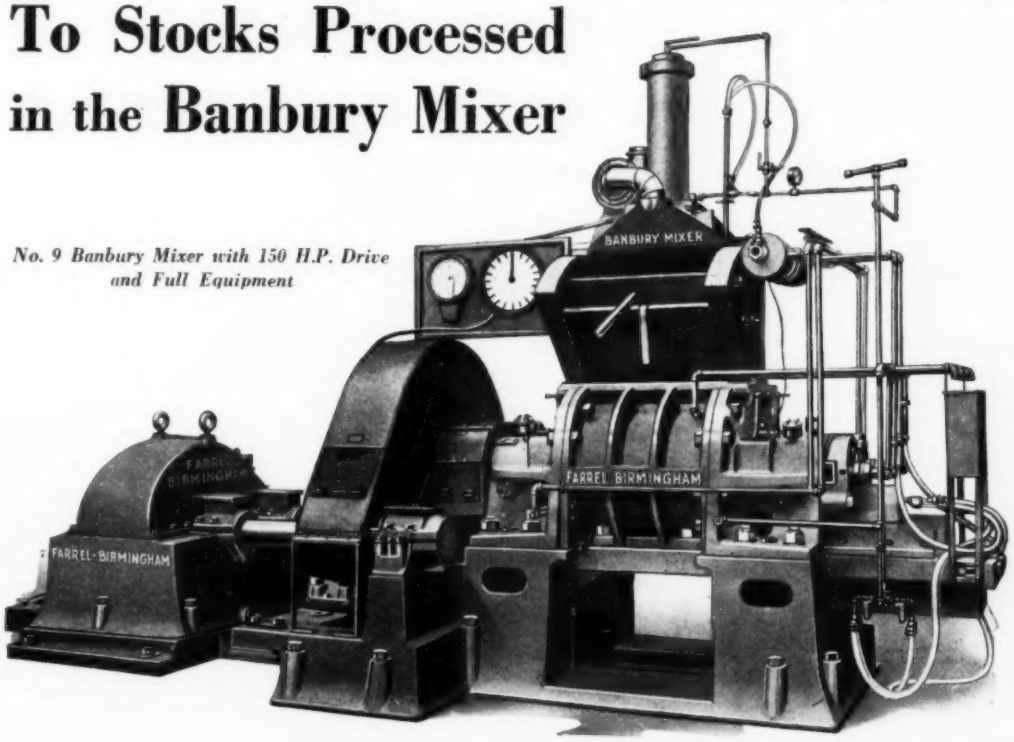
The Royle line includes seven sizes of tubing and insulating machines and various types of straining machines.

JOHN ROYLE & SONS

PATERSON, N. J.

REPRESENTED BY AKRON RUBBER MOLD & MACHINE CO.

You Know Just What Has Happened To Stocks Processed in the Banbury Mixer



No. 9 Banbury Mixer with 150 H.P. Drive and Full Equipment

EVERY Banbury is equipped with devices by means of which close supervision of output and quality can be exercised.

The Timing Clock has a large dial and minute hand and is located to be easily visible from the charging platform. A number of paper dials are furnished on which are written the instructions for mixing each different stock, a new chart being inserted on the face of the clock whenever there is a change of stocks in the day's run. The dials are graduated by minutes and are marked to show, for example, how long the rubber should break down before powders and accelerators are added, how much time should elapse before sulphur is charged and finally when to unload, either at a given time or when the temperature reaches a certain point. The timing device can also be connected with a series of colored lights or with a gong, or both, to warn forgetful operators that it is time to do something.

The chart produced by the Recording Thermometer is a record of the entire day's (or shift's) output and shows whether or not the instructions on the Timing Clock have been followed. It tells when every batch was started and the time and temperature at unloading. It reveals when the weight was lifted for the addition of compounds and whether it was held up too long, also the interval between batches.

Proper mixing procedure results in uniformly mixed stocks of improved quality. If laboratory or other tests indicate lack of uniformity or quality, reference to the record will disclose if the fault is attributable to failure to observe the rules prescribed for mixing.

No other method of mixing makes such close control of operations so easy. And the other advantages —such as (1) the large savings in power and labor, (2) reduction of floor space, (3) more economical handling of materials and (4) possibilities of cheaper formulae while still maintaining quality—make a Banbury an essential unit in the modern plant manufacturing rubber and other plastics.

Over 300 installations have proved the Banbury's worth and have given us the experience from which have evolved the present sturdy, dependable models with more efficient cooling, greater resistance to wear from abrasive mixtures and other improvements in mechanical design, which result in steady production and freedom from maintenance troubles and expense.

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SERVICE AND SATISFACTION

HYDRAULIC ENGINEERING PROBLEMS GIVEN SPECIAL ATTENTION

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Manufacturers of

Whiting English Cliffstone Paris White

From Selected Imported English Chalk and Cliffstone

When Buying Whiting Do Not Fail to Specify

SOUTHWARK BRAND

Guaranteed Not to Contain Adulterations

Quality and Service Unexcelled

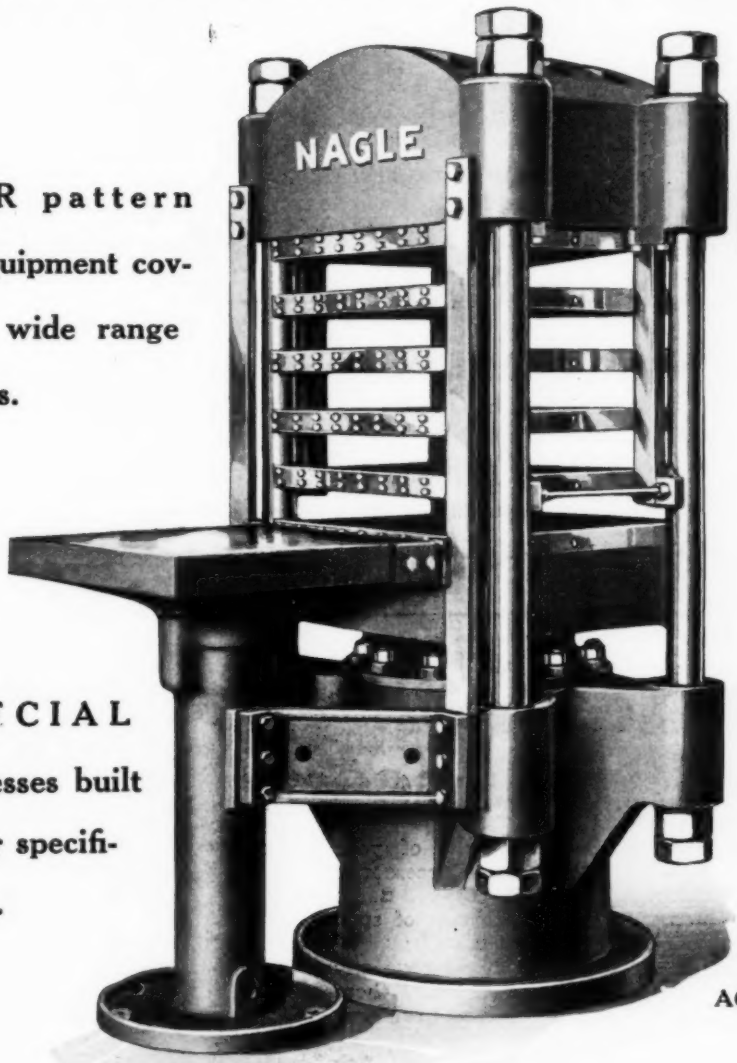
Established 1880

SOUTHWARK MANUFACTURING CO. CAMDEN, N. J.

HYDRAULIC PRESSES

OUR pattern equipment covers a wide range of sizes.

SPECIAL presses built to your specifications.



WE build

MILLS
CALENDERS
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WASHERS
CRACKERS
TUBERS
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HEATERS
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BATTERY
BOX PRESSES
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Five Opening Press with Hydraulic Lift and Rolled Steel Platen

NOTE: WE OWN and CONTROL: All Patents, Patterns, Drawings and Records of the Former ALLEN MACHINE CO.

NAGLE MACHINE CO.

ERIE, PA., U. S. A.

SUCCESSOR TO ALLEN MACHINE CO.

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DAVOL RUBBER COMPANY

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Providence, Rhode Island, U. S. A.

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Fine Rubber Goods for the Drug, Hospital, Stationer and Dental Trades

SPECIAL GOODS MADE TO ORDER
BOTH MOLDED AND HAND MADE

Sample Rooms: NEW YORK CHICAGO BOSTON SAN FRANCISCO

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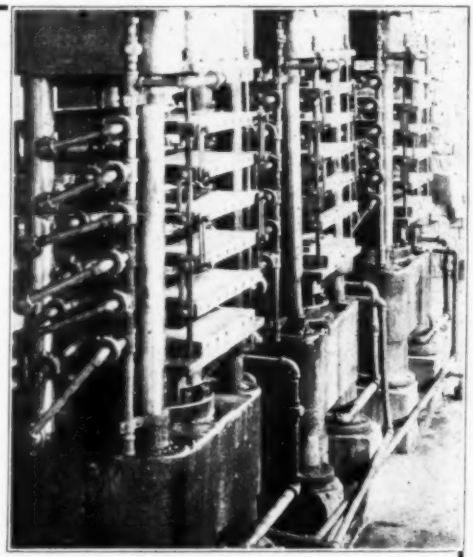
"Shut-down" Insurance

THE best insurance against shut-downs of your presses and molds is the installation of accessories that do not require frequent renewal or repair. Barco Flexible Joints are among the most important of such accessories.

These joints stand up for long periods without any attention. Since they have no soft rubber gaskets, there is no depreciation from condensation or the alternating heat and cold.

There are over 1,000,000 Barco Joints in service. Ask for Catalog 251, giving full details.

BARCO MANUFACTURING COMPANY
1801 Winnemac Avenue, Chicago, Illinois



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Reclaimed Rubber

For All Purposes

Renowned for

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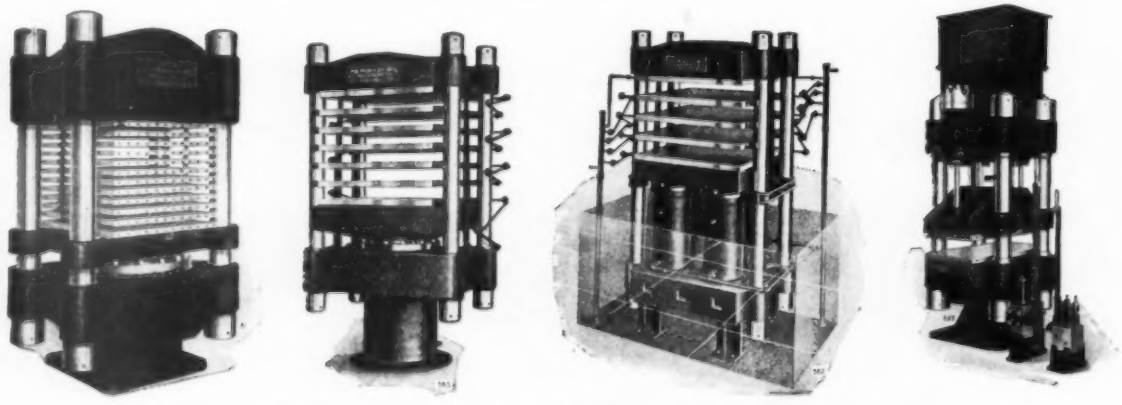
AKRON REPRESENTATIVE: WHITE & CO., AKRON SAVINGS & LOAN BUILDING

FRENCH HYDRAULIC MACHINERY



Presses of all types and a complete line of Hydraulic Equipment

Write for Catalog and Data Sheets. New
Ones Will Be Mailed at Regular Intervals.

THE FRENCH OIL MILL MACHINERY CO.

PIQUA, OHIO

NEW YORK PITTSBURGH AKRON CHICAGO

Trade Mark

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Fifty-Two Factories

Branches in all Principal Cities

Manufacturers of All Classes of Rubber Goods, including—

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U. S. USCO Balloon Tires
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Usco Sheet Flooring
"U. S." Paracore Insulated Wire and Cable
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Exporters of the Products of

United States Rubber Company

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MAIN OFFICE:

1790 Broadway, New York, U. S. A.

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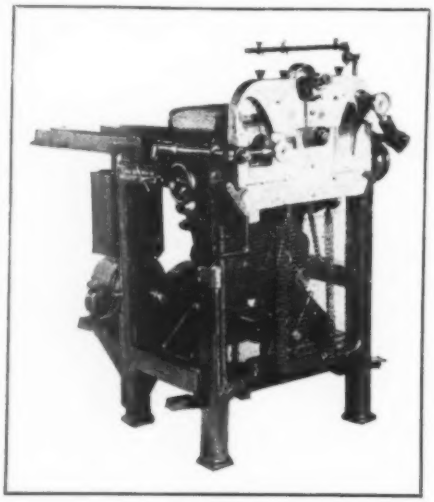


Patents Pending

Rubber Stock Cutting Machine

This machine will accurately cut uncured stocks of heels, balls, washers, plumbers' supplies, air brake hose and similar types of goods.

Works equally well on cured stocks for hose washers, bottle stoppers, bumpers, pads, etc.

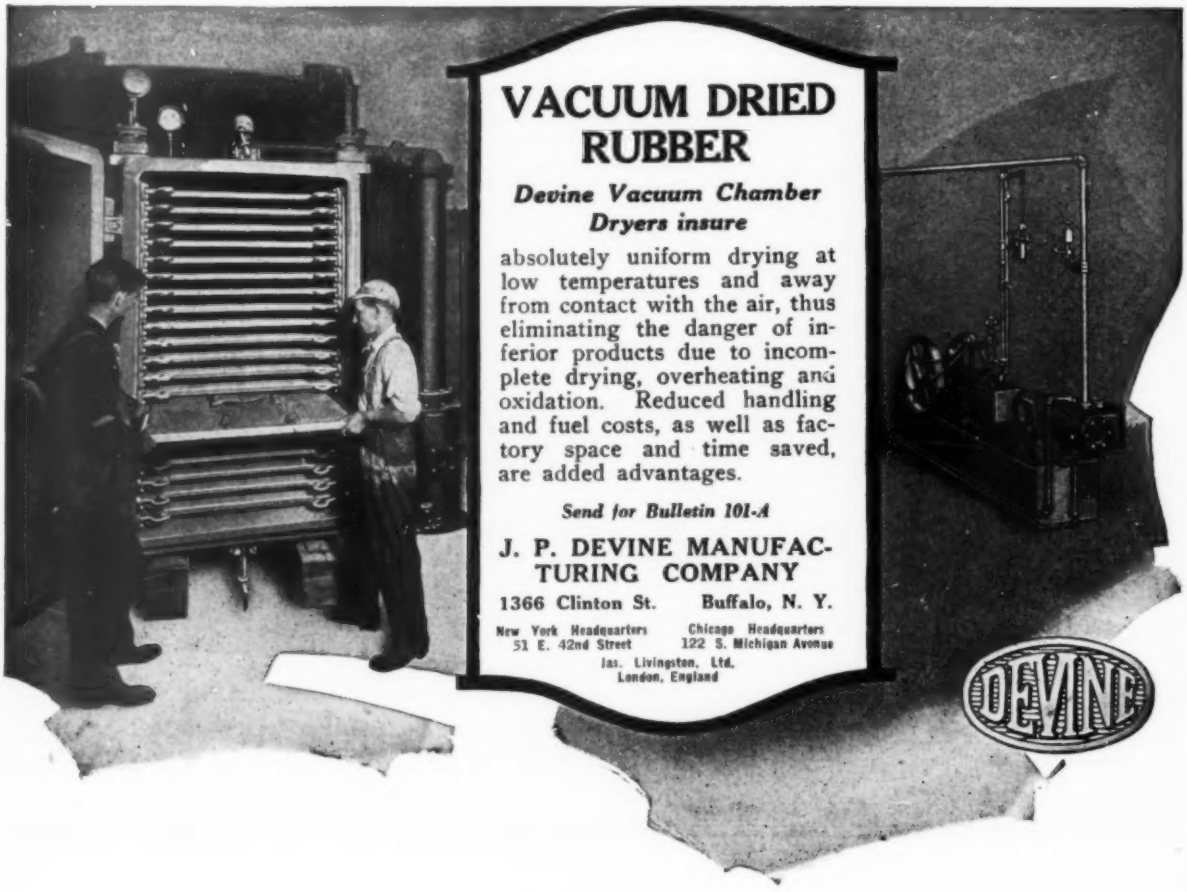
Motor driven, automatic and very fast—It will solve your cutting problems.

Send us samples of any cutting operation you may have and we will return them with a report for comparison with your present methods.

We Specialize in Rubber Cutting Machinery and Welcome Your Inquiries

BLACK ROCK MANUFACTURING CO.

175 OSBORNE STREET **BRIDGEPORT, CONN**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Devine Vacuum Chamber Dryers insure
absolutely uniform drying at low temperatures and away from contact with the air, thus eliminating the danger of inferior products due to incomplete drying, overheating and oxidation. Reduced handling and fuel costs, as well as factory space and time saved, are added advantages.
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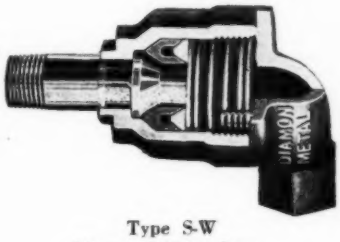
DEVINE

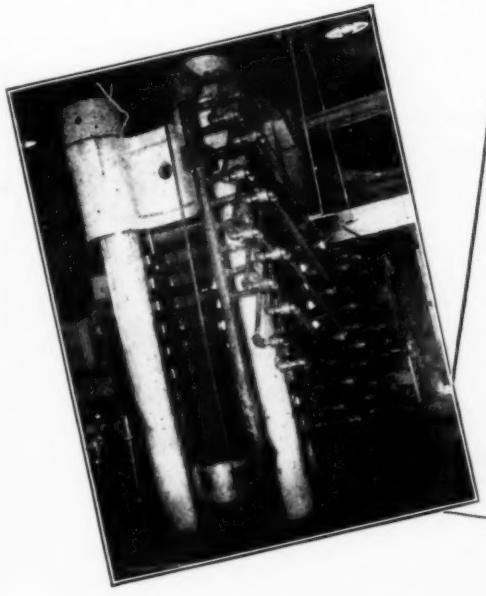
Type S-W - - - A new

Diamond Swing Joint

The only joint of its kind — will not leak — works satisfactorily handling alternating high-pressure steam and cold water.



Type S-W
Diamond Swing Joint
Pat. Pend.



Campbell Fibre Company
VULCANIZED FIBRE
STANTON, DEL., U.S.A.

MARCH 1, 1928

DIAMOND METAL PRODUCTS CO.
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GENTLEMEN:

YOURS OF THE 22ND. THE 1/2" JOINT WHICH YOU FURNISHED US FOR TRIAL IS STILL WORKING SATISFACTORILY AND THERE HAS NOT BEEN A DROP OF WATER OR STEAM ESCAPE THIS JOINT. IT HAS BEEN IN APPROXIMATELY 6 MONTHS, AND THERE IS NO DOUBT IN OUR MINDS THAT IT WILL RUN ANOTHER 6 MONTHS WITHOUT ATTENTION.

THE 3/4" AND 1" JOINTS HAVE ALL BEEN INSTALLED AND ARE WORKING TO OUR SATISFACTION. I HAVE TRIED VARIOUS TYPES OF SWING JOINTS OVER A PERIOD OF 16 YEARS AND I AM PLEASED TO STATE THAT THESE ARE THE BEST JOINTS I HAVE EVER SEEN OR USED, AND ESPECIALLY IN A CASE WHERE THEY ARE SUBJECT ALTERNATINGLY TO HIGH PRESSURE STEAM AND COLD WATER.

TO MAKE A LONG STORY SHORT, WE BELIEVE YOU HAVE THE LAST WORD IN SWING JOINTS, AND WHEN WE ARE IN NEED OF MORE JOINTS, WE WILL USE THE NEW STYLE (TYPE SW) DIAMOND SWING JOINTS.

VERY TRULY YOURS,
CAMPBELL FIBRE CO.

J. R. Neill

JRN/W

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You are invited to test them in your own plant without charge. If they are not satisfactory return them and we will pay express both ways. Size ⅜", ½", ¾", 1" shipped from stock.

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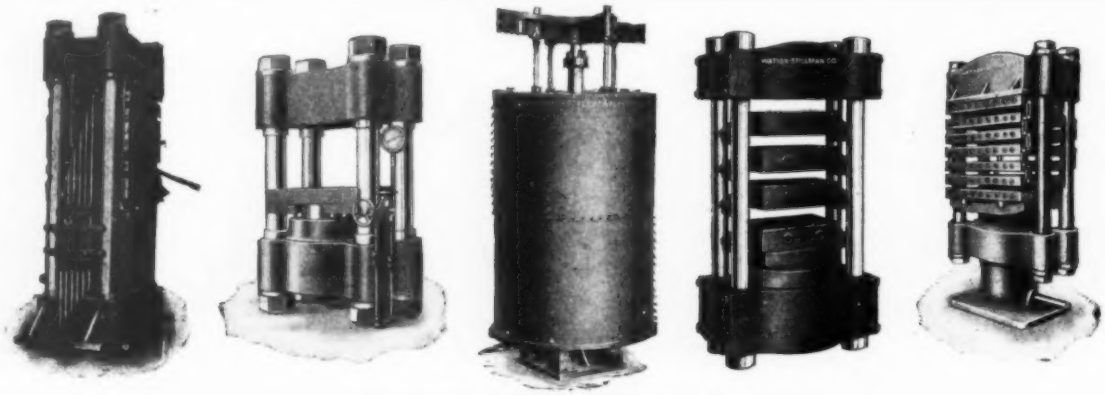

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STANDARD and SPECIAL HYDRAULIC PRESSES, ACCUMULATORS, PUMPS, VALVES, FITTINGS, ETC., SPECIAL MACHINERY

We build complete hydraulic plants, including pipe, valves, pumps, accumulators, intensifiers and presses for every purpose such as

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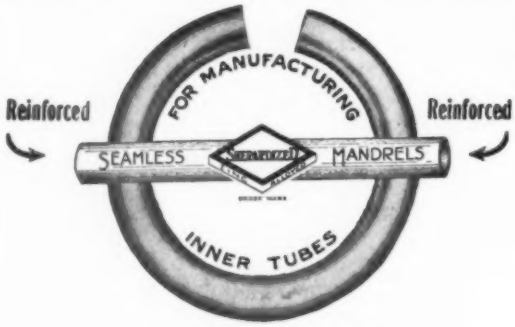

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SPECIAL STEEL — 51st ALUMINUM

For Inner Tubes, Jar Rings, Car Couplings, Steam and Garden Hose.

All Highly Polished, Sherardized, Chromium Plated or Case Hardened.

THE BETTER STOCK SHELLS

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Guaranteed Against Breakage Under Any Conditions.

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SINCE 1868

Still Supreme in Quality and Service

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THAT HAS STOOD
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Special GRADES for the following TRADES

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We will cheerfully furnish samples upon request

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ZINC OXIDE

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COMPARE the **Horse Head** and **Kadox** Brands with other types of Zinc Oxide in low temperature accelerated compounds — on the basis of activation and reinforcing. ▼ *Note particularly* the early development of high tensile strength and the advantage in abrasion and tear resistance.

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We also offer comprehensive facilities to all users of and dealers in rubber for covering their requirements and hedging their commitments by contracts for the future delivery of rubber on the Rubber Exchange of New York, Inc.

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NEW YORK COTTON EXCHANGE BLDG.
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Our upwards of thirty-five years of practical, constructive manufacturing experience are at your service.

IF

N. B. O.

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Original Black Sheet

were our only achievement of note during the time we might feel satisfied, but all our lines of Sheet and Rod Packings, Hose, Belting, Matting, Tubing, Pump Valves, etc., are as firmly established in reputation as the best and most dependable.

We have long since earned the reputation as being EXPERTS in the mechanical line.

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Manufacturer of

Reclaimed Rubber

of

Standardized Quality

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Tensile
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Acushnet Process Company

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WE market high grade friction reclaimed, and reclaim tire frictions for the trade

LARGEST MAKERS OF MECHANICAL RUBBER GOODS IN THE WORLD

The Bull Dog has stood for quality

BOSTON WOVEN HOSE AND RUBBER COMPANY TRADE MARK

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MODERN COMPETITION

Demands the Most Efficient Equipment to Produce High Quality Goods

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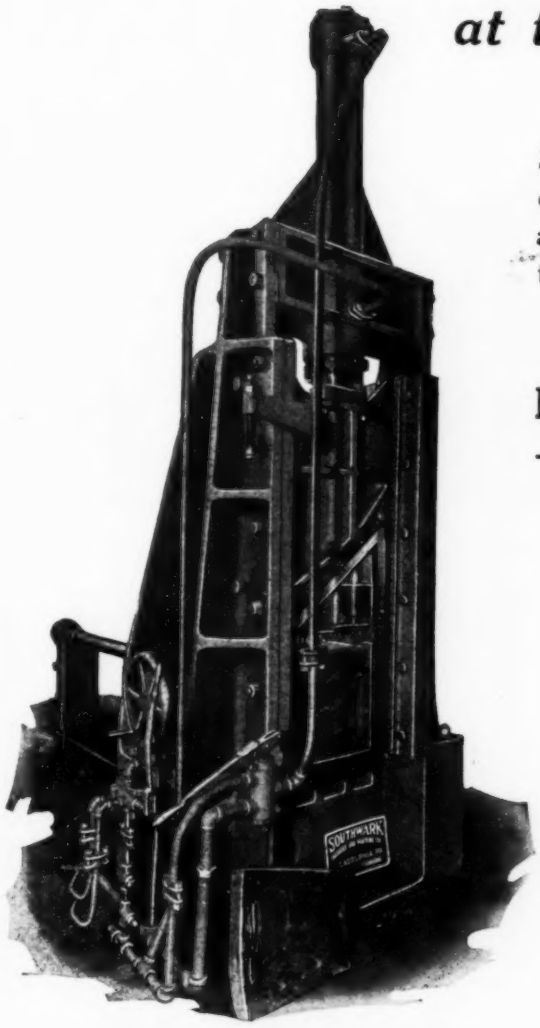

Southwark Hydraulic Rubber Shear

Southwark Engineers with ninety-two years' experience have built up an engineering staff and shops, capable to build special apparatus to suit the most exacting requirements.

Hydraulic Presses for Every Purpose —Pumps, Accumulators, Valves, Fittings, Etc.—

Our Standard Products Include

- Battery, Jar Presses
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- Tire Forcing Presses
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SOUTHWARK FOUNDRY AND MACHINE CO.
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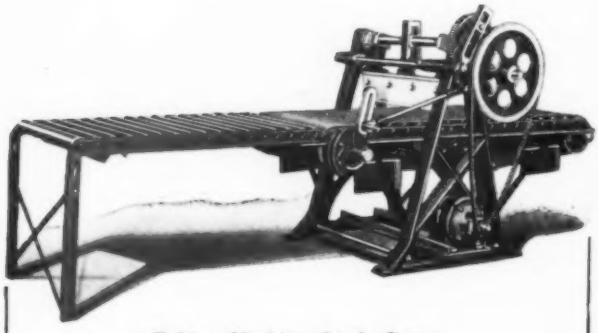
408 Washington Avenue

De Laval Worm Gear Speeds up production

THIS 15⅜ to 1 ratio gear is transmitting 40 to 75 hp. from a 575 to 1150 r.p.m. motor to a 6 in. Allen Tuber in a rubber tire plant. As lubrication is supplied from a plant oil circulating system, the worm gear speed reducer practically never requires attention.

De Laval Steam Turbine Co., Trenton, N. J.



Tubing Machine Stock Cutter

The "Weir" machine automatically cuts rubber as it comes from the mills into strips of proper size for the tubing machines. One of these machines will take care of the production of three or four mills and eliminate all labor between mills and tubers. The use of one "Weir" rubber cutter in a plant employing only one will result in a substantial saving of time and labor.

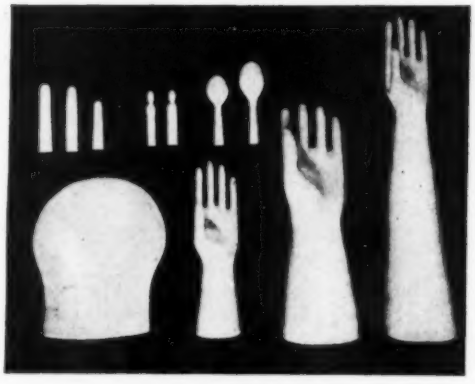
The Housatonic Machine & Tool Co.

BRIDGEPORT CONNECTICUT

Manufacturers of the

"WEIR"

Insulating, Tubing, Cutting and Rubber Straining Machines



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VITRIFIED PORCELAIN FORMS FOR DIPPED RUBBER

The Only Manufacturers of One Piece Up-To-Date Closed End Forms

COLONIAL INSULATOR CO.

Established 1894 AKRON, OHIO

QUALITY

No need to speak to most rubber manufacturers of the high quality of

MICRONEX

The World's Standard Gas Black

Long ago they discovered it for themselves and recognized the importance this unique ingredient plays in giving them a better product.

It was the first high quality carbon developed for rubber. It has always been maintained as the admitted leader and no expense will be spared to continue it as such in the future.

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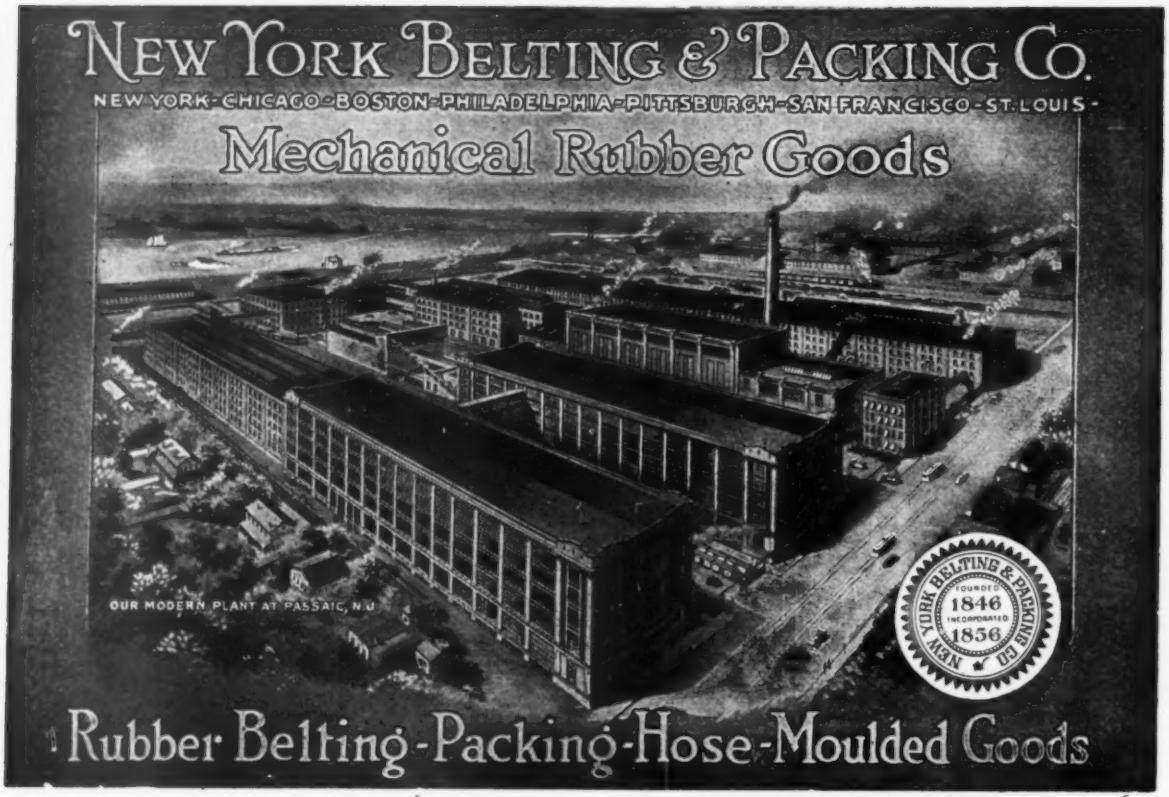
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NEW YORK-CHICAGO-BOSTON-PHILADELPHIA-PITTSBURGH-SAN FRANCISCO-ST. LOUIS-
Mechanical Rubber Goods
OUR MODERN PLANT AT PASSAIC, N.J.
NEW YORK BELTING & PACKING CO.
FOUNDED 1846
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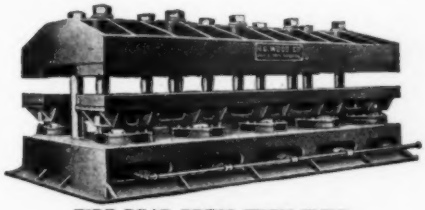
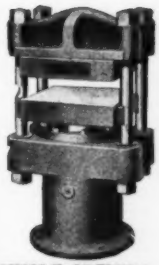
For the Rubber Industry

TIRE HEATER PRESS
STANDARD TYPE



TIRE BEAD PRESS TWIN TYPE

CLOSING PRESS



SINGLE OPENING
STEAM-PLATEN PRESS

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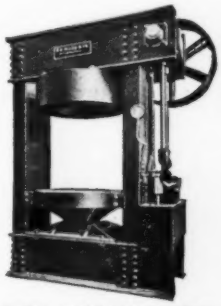
TWO OPENING STEAM-PLATEN
PRESS

We build a complete line of up-to-date hydraulic equipment for the manufacture of rubber tires and mechanical rubber goods.

Our experience, extending over a long period of years together with our excellent shop facilities also enable us to design and build hydraulic machinery for any special requirement.

Catalogue mailed upon request.



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HYDRAULIC MACHINERY & OPERATING VALVES

R. D. WOOD & CO.
ESTABLISHED 1803
PHILADELPHIA, PA.

CAST IRON PIPE, HYDRANTS AND VALVES

WASHED and DRIED RUBBERS

Selected Acre Bolivian Fine Para

Washed and Air-Dried
in the U. S. A.

Para Grades Washed and Air-Dried in Brazil

BENI-BOLIVIAN FINE
ISLANDS FINE
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Peruvian and Brazilian Balata

Crude and Washed and Dried

Address—Washed Rubber Department

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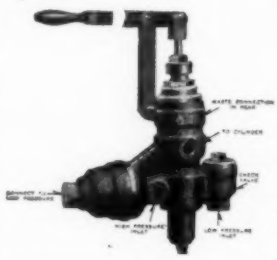
Stuart Operating Valve

Used more extensively than any other Valve. . . and Why



FOUR VALVES IN ONE!

1 Because it does the work of Four Valves.
2 Because it is Automatic.
3 Because it has Unified Control.
4 Because it is Economical.
5 Because it is Easy to Operate.

These are the reasons why the Stuart Two Pressure Automatic Operating Valve is supreme in its field. In use in plants and mills throughout the country. Consists of a low pressure valve, a high pressure valve, an exhaust valve and a check valve, all operated by one lever with three working positions. Variations of high and low pressure supply lines in no way affect its proper action. No adjustment necessary when repacking.

Simple Durable Easy to Operate
Saves High Pressure Water and Labor
Our Bulletin will convince you

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The Pittsburgh Valve, Foundry & Construction Co.

PITTSBURGH, PA.
MAKERS OF ATWOOD PRODUCTS
Offices in the Principal Cities.

THE HARSHAW FULLER & GOODWIN CO.

1610 HANNA BLDG.—CLEVELAND, OHIO

CHEMICALS - COLORS - PIGMENTS

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LEAD OLEATE — LITHARGE
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FALK
Speed Reducers

Out Today

Bulletin No. 190 on Falk Herringbone Gear Speed Reducers is off the press today. New rating tables of actual working capacities—new dimension tables—larger stock and quicker shipments—larger number of standard ratios—increased capacity with correspondingly lower prices.

Ask for Bulletin 190 and price list.

Let us quote you for comparison on your present needs.

THE FALK CORPORATION
Milwaukee

FALK

Flexible Couplings

Cushion the Impact

Falk Flexible Couplings absorb the shocks that wear out your machinery. All steel with self-contained lubrication — they damp out vibration and prevent misalignment indefinitely. Made in stock sizes on a production basis.

Write for our new Bulletin 180. **Quotations promptly made.**

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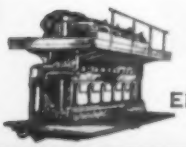

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FALK STEEL CASTINGS

HEAT and Age Destroy the Flexibility of Rubber

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THE AGE RESISTER

A PRODUCT OF

The C.P. Hall Co.

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MAROON OXIDE

Pure Maroon Oxide of iron in various shades, thoroughly washed and processed, for use in heavy stock or coating.

Test Sample Upon Request

Genuine Quicksilver Vermilion
Yellow Oxide of Iron
C. P. Zinc Yellow
Chromium Oxide
Refined White Barytes

JOSEPH A. McNULTY

114 LIBERTY STREET NEW YORK CITY

It Costs No More To Buy the Best

NO NEED CHANGING YOUR PRESENT METHODS

FORM Fitting Inner Tubes are conceded the best for service and can be economically made to fit any size of tire casing at relatively small expense for equipment.

It is only necessary to adopt the circular mandrel process rather than experiment with untried mechanisms or scrapping your present appliances.

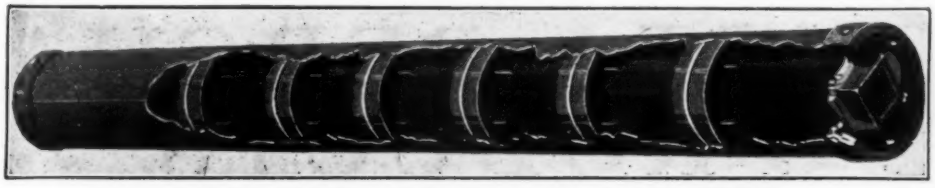
In balloon, truck and heavy duty sizes with their large cross sections and small diameters, round tubes are positively required. Circular mandrels will not increase their production cost. We will be glad to explain in detail how you can use circular mandrels without changing your present methods.

Made in either steel or strong aluminum alloy in all sizes from the small motorcycle to the largest truck tube. Almost immediate delivery.

ECONOMY CALENDER SHELLS

PREVENTS DENTS AND DAMAGE TO TUBES

The Shell With the Long Life



Manufactured under License of W. F. Gammeter Co. Patent No. 1,524,483.

PROBABLY the most important feature of a calender shell is its strength and durability.

Economy Calender Shells have been re-inforced where the wear comes without increasing weight and are particularly designed to withstand hard service and rough usage.

Notice the head with the seamless band ⅛" thick and 1" wide spot welded to the shell. This prevents dents and damage to the tube.

The shell itself is auto body sheet steel lapped and spot welded.

Double spiders of the same material used throughout and spaced on 6" centers. Extra reinforcement where it is most needed. The cut away picture shows this strong construction.

We can make quick deliveries on trial orders.

The CLYDE E. LOWE Co.

2976 EAST 81ST STREET · · · · · CLEVELAND, OHIO

Condor BELT

THE MANHATTAN RUBBER MFG. CO.

Mechanical Rubber Goods and Reclaimed Rubber

Executive Offices and Factories: Passaic, N. J.

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Hycoe
SETS A NEW BRAKING STANDARD
BRAKE LINING

GUTTA PERCHA PRODUCTS

Diamond B Splicing Tissue

Superior Quality

BEMIS ASSOCIATES INC.

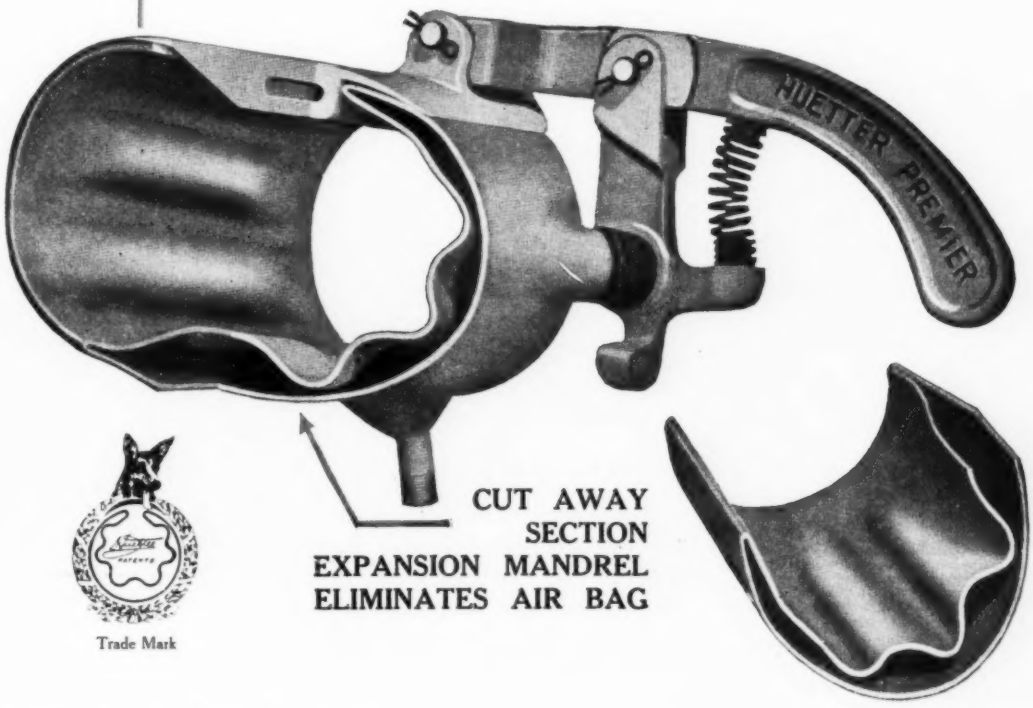
WATERTOWN, MASS. Cable Address—"TRUEGUTTA"

Good-bye Air Bags - - -

Expansion principle employed in new Huetter-Premier Steam Tube Splicer eliminates the costly air bag operation.

Special sheet steel and plated *rust proof* mandrel expands under fluid pressure and contracts to normal size upon release of pressure.

Economic Principle Applied to Splicing Tubes and Curing Tires. The World's Only Expansible Core. It Functions Like the Air Bag.



CUT AWAY SECTION EXPANSION MANDREL ELIMINATES AIR BAG

Trade Mark

In factories where the Huetter-Premier tube splicer is used, curing time is cut down to 3 and 3½ minutes per tube and one man can operate up to 10 units easily.

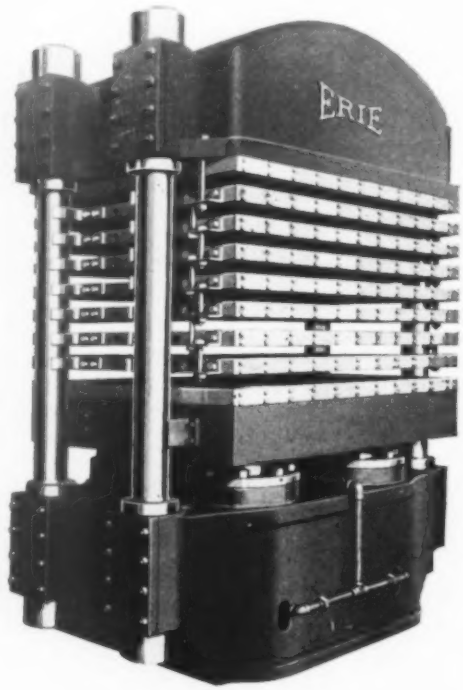
There is no replacement parts problem with the Huetter-Premier splicing equipment. Splicer jaws are lined with a soft rubber cushion, likewise steam heated, that will last for the life of the splicer. Huetter-Premier tube splicers can be purchased outright. No costly royalties to pay.

Write or wire, our expense, immediately, for details on this revolutionary and new tube splicer.

July and August issues of America's leading rubber magazines carry double page announcement showing complete splicing unit in operation.

Huetter-Premier Machine Co.

7215 Livernois-Ave. Detroit, Mich.



ERIE

Hydraulic Presses are built in all sizes and types.

This cut shows a 65" x 54" four ram Mat Press having Rolled Steel Platens.

MILLS REFINERS
TUBERS STRAINERS

TILING AND BELT PRESSES OF ALL SIZES

ERIE FOUNDRY CO.

ERIE, PENNA., U. S. A.

CRUDE RUBBER

IF IT PERTAINS TO
OR
COMMUNICATE WITH
S. BIRKENSTEIN & SONS
CHICAGO PHILADELPHIA or NEW YORK MINNEAPOLIS

SCRAP RUBBER

THE W. F. GAMMETER COMPANY

Announce

LOWER PRICES HIGHER QUALITY

QUICKER DELIVERY

The installation of specially built shell equipment results in lowered production costs; therefore lower prices to our customers on Universal Steel Calender Shells regardless of design.

Write for new quotations and secure the benefit of these lower prices, quicker delivery, and higher quality.

THE W. F. GAMMETER COMPANY, Cadiz, Ohio

Here it is
One gauge that tests ANY TIRE
New Gauge by
Schrader
REG. U.S. PAT. OFF.
Service Tire Gauge
10 15 20 25 30 35 40 45 50 55 60 70 80 90 100 110 120 130 140 150 160

A new gauge built in a new way

HERE it is . . . the tire gauge the industry has been waiting for . . . the new Schrader Gauge with these six big features . . .

First: *one* gauge that takes the place of four—tests *any* pneumatic tire, from bicycle to high pressure truck or bus tires.

Second: a single gauge calibrated from 10 to 160 pounds.

Third: a gauge that is hard to lose or mislay because it is bigger than usual.

Fourth: a gauge with a deflator attached, so that you can let air out of over-inflated tires quickly, easily, without damaging the valve inside.

Fifth: a gauge that is simple, accurate, easy to read, and easy to use on *any* type of wheel.

Sixth: a sturdy gauge, built to stand up under hardest usage—a gauge you can always depend on.

That's the new No. 6040 Schrader Service Tire Gauge—the most wonderfully efficient, all-purpose gauge ever produced.

A. SCHRADER'S SON, INC., BROOKLYN, N. Y.

Branches: Chicago - Toronto - London
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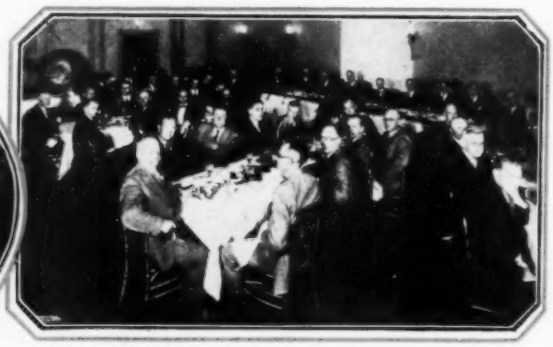
TIRE VALVES **Schrader** TIRE GAUGES

Makers of Pneumatic Valves Since 1844

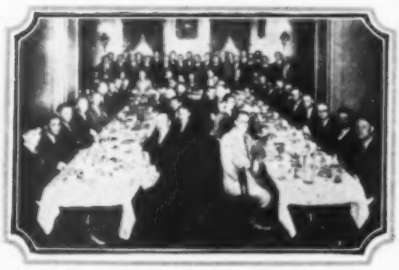
Why the Firestone

Southwestern Dealers Meet Mr. Firestone at Los Angeles

Firestone Dealers' Dinner at San Francisco



Portland Territory Dealers Meet Mr. Firestone



Meeting of Dealers with Mr. Firestone at Minneapolis

Milwaukee Dealers Reception to Mr. Firestone

Franchise

Attracts the Best Tire Merchants

The personal interest of the Firestone Organization in its dealers starts at the top with Mr. Harvey S. Firestone, who is recognized as the best informed manufacturer in the Industry concerning tire merchandising.

This knowledge has been gained by many years of personal contact with tire men in the field, climaxed by his most recent trade survey through the country covering more than 8,000 miles. On this trip he met more than 1,000 tire dealers, many of whom he talked with at their tire stores.

No wonder that the Firestone Franchise is the strongest in the Industry and Firestone sales policies are the most helpful and practical for the tire dealer. Firestone co-operation is sound and constructive because it is based on knowledge and experience.

Leaders in tire merchandising all over the country are already beginning to make their plans for the coming year and the future. Every dealer no matter how large, or small, nor what competitive conditions he is facing, needs today more than ever before, the strongest backing, such as Firestone is organized to give. The merchandising of tires is undergoing an important change, and if you want to dominate the tire business in your city, investigate the new Firestone plan. Write to the nearest Firestone Branch, or direct to the Home office at Akron, Ohio.

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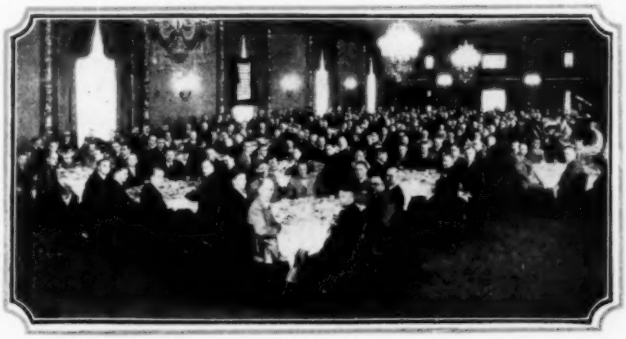

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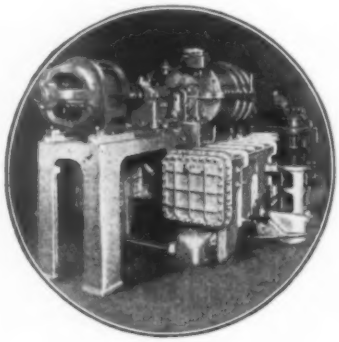

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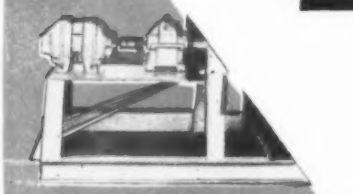

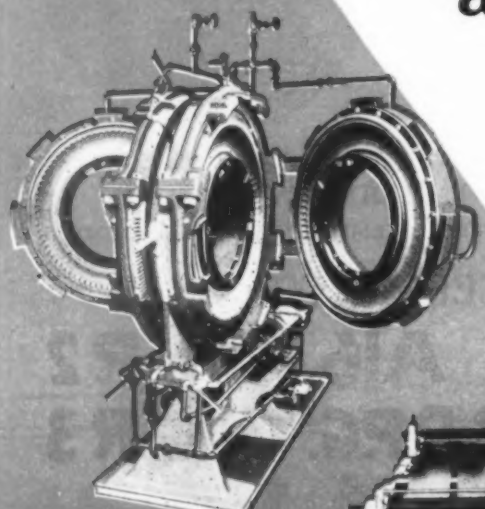

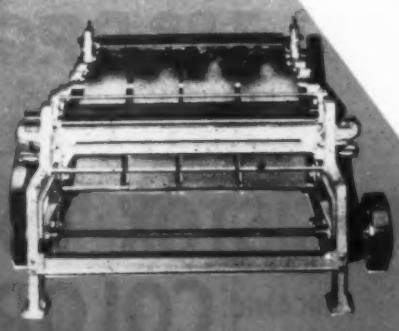

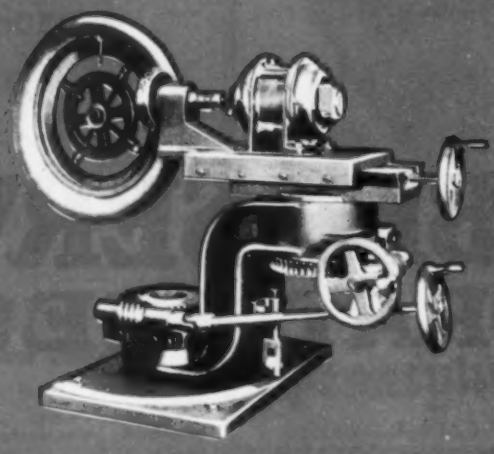

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INDIA RUBBER WORLD

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HENRY C. PEARSON, F. R. G. S., *Editor*

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Rubber Compression Testing Machine

C. L. HIPPENSTEEL

Bell Telephone Laboratories, Inc.

THE Bell Telephone System uses annually about 1,500,000,000 single conductor feet of rubber insulated wire. This wire is used in extending the telephone circuit from the nearest telephone terminal cable to the subscribers' premises and for house wiring. Great care must be exercised in the inspection of this product in order to assure satisfactory service life, and particularly to minimize the maintenance problem on aerial lines. As an aid in judging the ability of the rubber insulation to withstand service conditions, the Bell Telephone Laboratories have developed a new rubber compression testing machine. The first experimental machine built has been on trial in the Inspection Department of the Western Electric Co. for over two years. A recent and improved form of the compression machine is shown in Fig. 1.

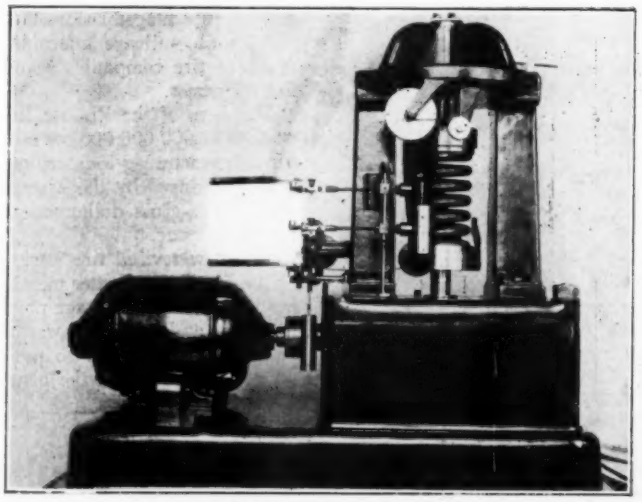


Fig. 1. Improved Rubber Compression Testing Machine[1]

Probably the two most frequent types of failure of rubber insulation are "side cutting" and "cracking." "Side cutting" is the tendency for the underlying metallic conductor to cut through the insulation. This occurs where one wire crosses another in a twist, or where the wire rests against glass or porcelain insulators or other means of support, when an excessive load results from sleet or other causes. A tough rubber is needed to prevent this. "Cracking" occurs at sharp bends and results from lack of flexibility of the insulation, due either to improper compounding or a tendency for the compound to change with age.

Toughness and flexibility of materials are usually gaged by the determination of tensile strength and elongation, and numerous modifications of tensile tests have been used for judging the quality of rubber insulation. However, these tests are of somewhat doubtful significance because of the difficulty of securing perfect specimens, the failure to imitate service strains, and the absence of other factors which operate when the insulation is in place on the conductor.

Two tests have been used for inspection purposes by both producers and consumers as criteria for judging the ability of insulated wires to resist the types of failures met most frequently in the field. Briefly these tests may be conducted as follows. Resistance to "side cutting" by the underlying conductor is determined by means of a "penetration test." In this test the rubber insulation is generally required to resist cutting by a taut steel wire of definite size resting on the insulation at right angles to the conductor when a specified load is applied for a specified time. Establishment of electrical contact is used to indicate complete penetration of the cutting wire. To judge whether or not the insulation is too brittle for satisfactory service, it is given a "wrap test." That is, the wire, after the braid is removed, is wrapped about itself three or more times, left for a definite period of time and rewound again in the reverse direction. The insulation is required to show no signs of rupture.

Although these tests have been of great use in judging the quality of new rubber covered wire, they are not entirely satisfactory. Neither test affords a numerical measure of the quality of one sample as compared with another, and consequently, it is not possible to detect reliably samples which may be close to failure and which would probably

[1] Designed and constructed by Henry L. Scott Co., Providence, R. I., in collaboration with Bell Telephone Laboratories, Inc., N. Y.

fail after a relatively short life, owing to gradual deterioration by natural aging processes. Another important inherent defect of the penetration test is that the sample submitted to test is very small, being limited to rubber lying immediately under and about the cutting wire. Consequently, variations in resistance to penetration may be due to single filler particles or aggregates of filler particles forming hard spots, or in other cases, soft spots caused by localized high concentration of wax or other softeners.

The test made on the new machine, designed by the Laboratories, it is believed, will advantageously replace both the wrap and penetration tests. In this new test a two-inch length of insulated wire is compressed with or without braid between a pair of parallel plane steel jaws. The rubber on the wire under test is compressed into an elliptical form. The layers of rubber between the conductor and the jaws are increasingly stressed as they grow thinner until sudden rupture occurs. Means are provided for recording simultaneously the pressure on the insulation at any moment and its corresponding thickness, thus plotting a stress-strain curve. The final break is recorded on the chart as a sudden drop in the needle as a result of diminution in thickness of insulation where the rupture occurs.

The new compression test gives a numerical measure, in pounds, of the ability of rubber insulation to resist cutting by the conductor, and the test is made on an adequate length of wire. Also, the rubber is tested in place on the conductor and in a way which is believed to be closely comparable with the conditions of strain occurring in service.

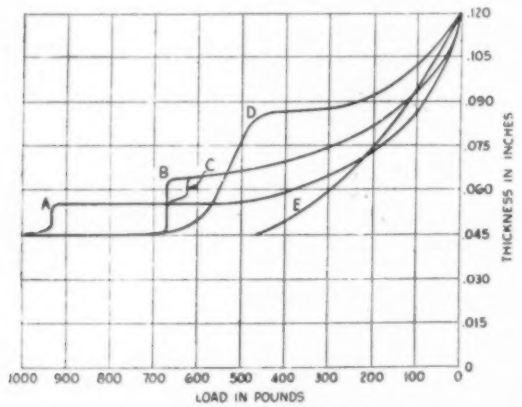


Fig. 2. Compression Tests of Rubber Insulation

The tendency toward brittleness of a compound may be detected by an abnormally large thickness at break. A recorded graph is shown in Fig. 2. Curve *A* is typical of a highly distensible high grade rubber compound. Curve *B* illustrates the average run of rubber compounds for aerial wire, both sides of the insulation rupturing simultaneously. In Curve *C* the conductor being somewhat eccentrically located, two distinct breaks are shown, first of the weaker wall, then of the stronger. Curve *D* is typical of a brittle compound. Curve *E* is typical of very soft rubber compounds and plastic or cold-flowing insulating materials. Thus from a test made on such a machine very much may be learned as to the character and quality of an insulating material.

Such a machine can be adapted for testing all kinds of insulated conductors and for making compression tests on various shaped rubber specimens, or sections from such articles as tires. Since many structural materials, such as steel, concrete, wood, etc., used in buildings, are often subject to compressive, rather than tensile strains in service, there is a possibility of usefully extending the application of the machine to a wide variety of materials.

A unique feature of the machine which may adapt it for the measurement of small deformations is that thickness is accurately recorded mechanically with a magnification of thirty times. At the present time magnifications of not more than three or four times have been attempted by this means for use on testing machines.

Rubber Institute Sponsors Tire Warranty

FORTY-FOUR tire manufacturers, members of the Rubber Institute, who produce 95 per cent of the tires made in the United States, announced on August 16 that they will guarantee pneumatic tires bearing their names and serial numbers against defects in material and workmanship during the life of the tire. In case of failure the tire will be repaired or a fair adjustment made by the manufacturer on the basis of the tire's normal expectancy of service had the defect not appeared.

The purpose of this warranty is to assure the buyer of a quality product, capable of satisfactory performance in service, and for which the manufacturer assumes the responsibility. This guarantee is broader in its protection to the individual, yet fairer in its operation to all, than anything now or ever placed before the public. It takes the place of the definite mileage guarantee which has been rejected by standard tire companies as unfair and uneconomical to the tire consumer.

Members of the Rubber Institute represent a yearly business of $1,000,000,000, or more than 80 per cent of the rubber manufacturing industry of the United States. The Institute is financed by the assessment of one-fiftieth of one per cent of the gross dollar sales of its membership during the preceding year.

The new revised tire warranty was one of the first efforts of the Institute to better merchandising conditions in the rubber industry. Plans were prepared by the tire manufacturing members and $415,000 was appropriated for a nation-wide educational campaign to put the revised tire warranty before tire dealers and the general public.

National Rubber Machinery Company

THE board of directors of the National Rubber Machinery Co. held a meeting Aug. 21, in the general offices of the company at Akron, O.

The consolidation comprises The Akron Rubber Mold & Machine Co.; De Mattia Foundry & Machine Co.; De Mattia Bros., Inc.; The Banner Machine Co.; The Kuhlke Machine Co. After the meeting the following announcement was made:

The several companies will continue to operate in their respective plants under the same supervision as heretofore. Communications should be directed to the various divisions of the consolidated company.

The same officials will be actively associated, and under the new organization with increased facilities, the new company will be in a better position to render its patrons prompt, economical and efficient service.

Each of the former concerns appreciates the business accorded them in the past, and on behalf of the new organization solicits a continuance of this patronage.

American Planting Companies

The total production of American-owned Hevea plantations in 1927 was 35,485,000 pounds. This amount is equivalent to 2.6 per cent of total world production and 4.3 per cent of American consumption. American crude rubber production has doubled in the past four years.

Annual output	35 million pounds
Planted area	140,000 acres
Mature area	82,000 acres
Total investment	$50,000,000
Capital cost per acre	$350
Yield per acre	435 pounds

Of the 14 American companies, 13 are in active operation. The total planted area is 139,500 acres of which 81,500 acres are in tapping. The average output per acre in tapping in 1927 was 435 pounds.

Exact amount invested is not available except for the largest company and for those incorporated in Hawaii. It is probable that the total investment of American capital is $50,000,000, or at the average rate of $350 per planted acre.

Wide-spread public and governmental interest was directed to American-owned rubber plantations, following the rapid price advance in 1925. It is well to remember that up to 1925 Americans had planted 101,000 acres, of which 64,000 acres were mature. Of the 14 present American companies, one started planting in 1906, three in 1910, one each in 1911 and 1912, two in 1913, one each in 1916 and 1917 and two in 1918. Of the other two American-owned companies, one started planting in 1926 and the other has not as yet begun planting operations.

AMERICAN RUBBER PLANTING INDUSTRY—1927

	Total Owned Acres	Acreage Planted	Acreage In Tapping	Production Lbs.	Lbs. Per Acre in Tapping
U. S. Rubber Co.	135,053	87,000	54,053	25,677,000	475
Goodyear	49,000	15,500	14,200†	5,250,000†	370
Hawaiian Sumatra	12,415	3,265	2,428	1,035,415	425
Continental	22,295	4,271	3,300	782,383	237
Pahang	2,858	1,467	1,231	628,000	510
Manhattan	1,803	1,488	1,155	504,825	436
American	2,338	1,800	1,500	480,000	320
Firestone	100,000*	21,077	1,077	378,869	351
Selama-Dindings	4,581	1,463	1,054	373,816	355
Tanjong Olak	2,595	951	951	254,689	268
Basilan	2,500	797			
Rio Grande	2,500	360	600†	120,000†	200
Zamboanga	110	110			
Total	338,048	139,549	81,549	35,484,997	435

*Cleared for planting. Original concession 1,000,000 acres. †Estimated.

	Total Investment to Dec. 31, 1927 Total	Per Planted Acre	First Planting
U. S. Rubber Co.	$33,113,236	$381	1910
Goodyear	7,000,000	453	1916
Continental	1,879,000	440	1918
Hawaiian Sumatra	1,047,916	321	1913
Selama	399,435	317	1910
Pahang	376,353	257	1906
American (1925)	337,674	220	1918
Tanjong Olak	305,263	320	1917
Basilan	160,000	200	1910
Total	$44,618,877		

Manhattan first planting was in 1911; Firestone in 1926; Rio Grande in 1912; and Zamboanga in 1913.

The statistics and other facts contained herein were, with few exceptions, compiled from published sources. All American companies, incorporated in the United States or its insular possessions, are included. Since Hevea only is discused, there is excluded any reference to Intercontinental's guayule acreage in Mexico and the United States.

United States Rubber Co.

Sumatra and British Malaya

Owns and operates several estates in the Government of Sumatra East Coast, Dutch East Indies and in Selangor and the native states of Kedah and Johore, British Malaya. Total area owned 135,053 acres, of which 87,000 acres planted and 54,000 acres in bearing. Total investment to December 31, 1927, is $33,113,236, or $381 per planted acre.

Estates are directly operated by the following companies: Hollandsch Amerikaansche Plantage Mij., inc. 1911 in Holland; Nederland Langkat Rubber Mij., inc. 1911 in Holland; Si Pare Pare Rubber Mij., inc. 1915 in Holland; Malayan American Plantations, Ltd., inc. 1920 in the Federated Malay States.

These four companies are owned and managed by United States Rubber Plantations, Inc. (Inc. New York, 1917), which in turn is wholly owned by General Rubber Co. (Inc. New Jersey, 1904), a direct subsidiary of United States Rubber Co.

Sumatra. First concession secured in 1910 and planting started. Total area owned: 104,232 acres. First commercial tapping in 1914.

British Malaya. In 1920, purchased first estate, part of which was planted. Total area owned: 30,821 acres. First commercial tapping in 1920.

	Acreage Planted Annual	Total	Tapping	Production Lbs.	Lbs. Per Acre in Tapping
1922	.....	59,228	45,100	14,307,000	316
1923	2,395	61,623	45,637	14,631,000	320
1924	9,358	70,981	46,258	16,728,000	362
1925	3,856	74,837	49,994	19,670,000	394
1926	7,737	82,574	51,828	22,900,000	441
1927	4,426	87,000	54,053	25,677,000	475

Goodyear Rubber Plantations Co.

Sumatra, Dutch East Indies

Operates under a 75-year concession, dating from December 29, 1906. Rental: one guilder per hectare. Area: 21,000 acres. Five estates located in Dolok Merangir, district of Panei, provinces of Simeloengoen and Karolanden, East Coast of Sumatra. Total investment: 1922, $4,000,000; 1926, $7,000,000, or $453 per planted acre. Managed by Goodyear Rubber Plantations Co., incorporated Sept. 3, 1924, with a capital of $6,615,000. Began planting in 1916. Acquired an additional area of 29,000 acres in 1927. Acreage and yield of separate estates in 1924 (last year available) were as follows:

	Acres Planted	Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
Dolok Merangir	2,710	2,380	735,448	309
Dolok Meinoe	3,109	2,543	253,502	100
Dolok Kabeian	2,721	1,643	92,127	56
Negri Lawan	2,970	1,186	75,802	64
Batoe Silangit	3,748	1,215	69,578	57
Total	15,258	8,967	1,226,457	137

	Planted Acreage		Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
	Annual	Total			
1920	.....	10,000	.....	361,456	...
1921	1,000	11,000	.....	442,519	...
1922	.....	.....	.....	477,466	...
1923	.....	.....	.....	585,737	...
1924	.....	15,258	8,967	1,224,009	137
1925	89	15,347	14,223	2,745,554	193
1926	89	15,436	14,114	4,026,466	285
1927	.....	.....	.....	5,250,000	370

Hawaiian Sumatra Plantations, Ltd.

Sumatra, D.E.I.

Incorporated June 10, 1916, in Hawaii. Present capital: $1,238,360 in shares of $20 par. Owns two 75-year concessions (dating from 1911-12) for a total of 12,415 acres. Concessions have a balance sheet value of $320,000.

Kwala Goenoeng Estate, 5,620 acres in East Coast of Sumatra of which 2,130 acres planted. First planting in 1913 and first tapping in 1919. Book value, $443,527 or $205 per planted acre. 1927 yield was 563 pounds per planted acre on total mature area of 1,500 acres.

Pantai Boeaja Estate, 6,795 acres in Langkat, of which 1,135 acres planted and 928 acres in bearing. First planting in 1918 and first tapping in 1924. Book value, $662,495 or $584 per planted acre. 1927 yield was 205 pounds per planted acre.

	1925	1926	1927
Property investment	$1,075,716	$1,089,314	$1,106,035
Per planted acre	387	347	338
Surplus	149,617	13,842	12,647
Market value of stock — High	$73.00	$62.50	$46.00
Market value of stock — Low	8.25	38.00	27.50

1927 Report: All-in cost (including amortization, taxes, etc.), 20.64 cents. Reserves, development, $43,256; concessions, $14,850; total, $58,106. Net profit, $182,844. Dividends paid, $185,754 (15%).

	Planted Acreage		Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
	Annual	Total			
1922	....	2,428	450	84,178	187
1923	....	2,428	1,375	273,455	199
1924	150	2,578	2,076	618,251	298
1925	203	2,781	2,359	803,230	340
1926	358	3,139	2,428	985,747	405
1927	126	3,265	2,428	1,035,415	425

Continental Plantation Co.

Hoeta Padang Estate

Company incorporated under laws of Delaware, July 16, 1917. Holds four 75-year concessions aggregating 22,295 acres in the District of Kisaran, Province of Asahan, East Coast of Sumatra. Authorized capital, $3,000,000. Issued, $1,879,000, all to the Intercontinental Rubber Co. (of Delaware). Began planting in 1918. First commercial tapping in November, 1922. Issued capital is at the rate of $440 per planted acre.

	Acres Planted		Acres Tapped	Production Lbs.	Lbs. Per Acre in Tapping
	Annual	Cum.			
1918	611	611	.....	.....	...
1919	998	1,609	.....	.....	...
1920	1,340	2,949	.....	.....	...
1921	860	3,809	.....	.....	...
1922	52	3,861	.....	.....	...
1923	34	3,895	400	56,420	141
1924	29	3,924	805	153,533	191
1925	0	3,924	1,500	302,134	201
1926	223	4,147	2,574	476,463	183
1927	124	4,271	3,300	782,383	237

Pahang Rubber Co., Ltd.

Pahang, F.M.S.

Incorporated Dec. 4, 1906, in Hawaii. Capital: $300,000 in shares of $10 par. Cheroh Estate comprises 2,858 acres with 1,467 acres planted of which 1,231 acres mature; 938 acres planted 1906-09 and 112 acres in 1921. First tapping in 1911.

	1925	1926	1927
Property investment, less reserves	$311,917	$341,181	$376,353
Per planted acre	253	233	257
Surplus	108,946	146,526	141,773
Net profit for year	93,679	176,564	67,895
Dividends	17%	47%	24%
Cost per pound*	15.64¢	15.49¢	15.44¢
Selling price	53.81	50.37	35.20
Market value of stock — High	$59.75	$45.50	$40.00
Market value of stock — Low	14.00	40.00	26.50

On Dec. 31, 1918, stocks on hand were 305,575 pounds. Standard production 1926-27, 701,349; 1927-28, 586,482 pounds. Labor force: 509 Indians. Dividends reduced Jan. 1, 1928, from 20 cents to 10 cents per share per month.

	Planted Acreage		Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
	Annual	Total			
1922	....	1,047	952	432,500	455
1923	....	1,047	952	413,812	435
1924	....	1,047	952	276,974	291
1925	183	1,230	1,135	386,000	340
1926	237	1,467	1,231	612,900	498
1927	....	1,467	1,231	628,000	510

*Before depreciation, selling and agency expense.

Same management as Tanjong Olak Rubber Plantations, Ltd.

Manhattan Rubber Mfg. Co.

Pasir Koppo Estate

Through Lebak Plantations Co., Ltd., it operates six estates in the districts of Lebak and Rangkasbetoeng, province of Lebak, residency of Bantam, Java. Concessions date from 1906 and following years. Rental: 1.00, 1.50 and 2.00 guilders per hectare. Area: 1,803 acres. Manhattan acquired the estates in 1911. The prior owner started planting in 1908. The average number of trees per acre is as follows:

Area	Trees	Area	Trees
18 year	72	11 year	85
16 year	65	8 year	85
15 year	68	7 year	119
14 year	69	6 year	98

The total investment was estimated at $500,000 in 1920.

	Acres Planted	Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
1920	1,179	807	278,581	345
1921	1,179	807	262,961	326
1922	1,192	965	324,219	337
1923	1,192	965	393,390	408
1924	1,192	1,085	449,925	415
1925	1,392	1,136	454,482	400
1926	1,488	1,155	448,106	388
1927	1,488	1,155	504,825	436

American Rubber Co.

Philippine Islands

Incorporated in the Philippines in 1920, capital 600,000 pesos, to acquire a plantation started in 1918. Dr. J. W. Strong, manager. Estate located on Basilan Island, near the port of Isabela. Total area of 2,338 acres planted in rubber and coconuts. Total investment to 1925 was $337,674, gold. Began commercial tapping in March, 1924. Planting record is approximately as follows:

	Annual Acres	Total Acres	In Tapping Acres
1918	450	.....	.....
1919	450	900	.....
1920	330	1,230	.....
1921	300	1,530	.....
1922	...	1,530	.....
1923	...	1,530	10
1924	...	1,530	.....
1925	47	1,577	.....
1926	223	1,800	1,500

1927 output was at the rate of 320 pounds per acre.

Firestone Plantations Co., Ltd.

Liberia, West Africa

Incorporated in Great Britain in February, 1926, with a nominal capital of 1,000 pounds. Operates under two agreements with the Liberian Government. (1) Lease for 99 years of Mount Barclay Estate of 2,000 acres at an annual rental of $6,000. The estate was started in 1907 by a British company. Planting of Hevea was commenced in 1909 and by 1916 the total area was 1,077 acres, planted with 125,000 trees. The estate was abandoned and reverted to the government. It was taken over by Firestone in June, 1924, and tapping was started in early 1925. (2) Lease dated October 2, 1926, for 99 years of selected areas up to a total of one million acres. Annual rental of six cents an acre of land actually under development plus an export tax (after six years) of 1 per cent of the New York price, 20,000 acres to be developed within five years.

During the latter part of 1925 and during 1926, 20,000 acres were selected on the Du River and cleared. In June, 1928, 100,000 acres had been cleared. The labor force has increased as follows:

March, 1926	2,000 natives	
December, 1926	5,000 natives	
May, 1927	8,000 natives	100 whites
February, 1928	15,000 natives	118 whites
April, 1928	15,000 natives	123 whites

In Sept., 1925, a nursery of one million seedlings was established. By the end of 1926, 5,000 acres had been planted. Almost 15,000 acres were planted in 1927. At the present time (June, 1928) 27,000 acres are under operation. Of this, 20,000 acres are on the Du River and 7,000 acres on the Cavalla River, including 4,000 acres already planted. The total planted area is expected to reach 30,000 acres by the end of 1928.

	Planted Acreage		Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
	Annual	Total			
1925	.....	1,077	1,077	441,000	409
1926	5,000	6,077	1,077	475,598	441
1927	15,000	21,077	1,077	378,869	351

Selama-Dindings Plantations, Ltd.

Perak, F.M.S. and The Dindings, S.S.

Incorporated Dec. 29, 1911, in Hawaii. Present capital: $1,041,970 in shares of $10 par. Property consists of two estates:

Selama Rubber Estate, 1,508 acres in Perak, of which 1,260 acres planted. Of the total in rubber, 1,005 acres planted 1910-14. First tapping in 1917. Property investment, after reserves, $399,435, or $317 per planted acre.

Dindings Coconut Estate, 3,073 acres in The Dindings, of which 2,350 acres in coconuts and 203 acres in rubber (planted 1926-27). This estate has shown a profit in only one year during the past four years.

	1925	1926	1927
Surplus	$108,146	$115,150	$165,576
Dividends paid	3%	9%	.....
Market value of stock..... { High	$19.25	$16.00	$11.625
Market value of stock..... { Low	5.50	8.00	6.00
Selama Estate			
Net profit for year*	$147,506	$123,039	$68,010
Cost per pound†	12.5¢	12.9¢	.....

Selama Estate	Planted Acreage: Annual	Planted Acreage: Total	Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
1922	...	1,005	.....	267,031	...
1923	222	1,227	1,112	258,789	233
1924	‡	1,183	1,047	246,067	235
1925	‡	1,173	1,160	387,558	334
1926	87	1,260	1,054	526,292	500
1927	...	1,463	1,054	373,816	355

Standard Production: 1926-27, 544,989 pounds; 1927-28, 454,214 pounds

*Before Head Office charges and reserves.
†Before depreciation, reserves and agency expense.
‡Fifty-four acres abandoned.

Tanjong Olak Rubber Plantations, Ltd.

Muar River, Johore

Incorporated April 12, 1906, in British Columbia, reincorporated Jan. 2, 1917, in Hawaii. Capital: $300,000 in shares of $10 par, having been reduced from $20 par on May 15, 1923. Estate comprising 2,595 acres has not been increased since 1921. All planting done in years 1906-1909. First tapping in 1910. Dividends paid: 1919, 1 per cent; 1920, 7 per cent; 1926, 20 per cent.

	1925	1926	1927
Rubber forest, less reserve	.....	$259,991	$255,991
Buildings, less depreciation	.....	54,546	49,272
Total property investment	$316,044	$314,537	$305,263
Investment per planted acre	333	331	320
Net profit for year	29,922	49,847	5,309
Surplus	45,670	40,578	45,368
Cost per pound*	18.96¢	26.08¢	24.34¢
Selling price	46.47¢	49.49¢	36.96¢
Market value of stock..... { High	$28.25	$27.00	$14.00
Market value of stock..... { Low	5.00	15.75	6.00

On Dec. 31, 1927, stocks of rubber on hand were 91,140 pounds. The labor force consisted of 360 tamils. Standard production 1927-28, 267,986 pounds or 282 pounds per acre.

	Planted Acreage: Annual	Planted Acreage: Total	Acres in Tapping	Production Lbs.	Lbs. Per Acre in Tapping
1922	...	951	951	285,506	300
1923	...	951	951	258,310	272
1924	...	951	951	235,647	247
1925	...	951	951	225,295	237
1926	...	951	951	261,874	275
1927	...	951	951	254,689	268

*Before depreciation, export tax, selling and agency expense.

Same management as Pahang Rubber Co., Ltd.

Zamboanga Development Co.

Philippine Islands

Incorporated in the Philippines with Japanese capital. Started in 1913 by Carlos Miller and sold to present owner in 1917. In 1923, leased to American Rubber Co. Estate, known as Balactasan, is situated on the northern shore of Basilan Island. First tapping in 1918. Suspended in 1920, resumed in April, 1921, and again suspended in October, 1921. American Rubber Co. resumed tapping in January, 1923.

	Planted Acreage: Annual	Planted Acreage: Total	Production Lbs.
1913	50	50	.....
1914	60	110	.....
1923	..	110	40,000*

*Nine months.

AMERICAN PLANTATION STATISTICS—1922-27

PLANTED ACRES

	1922	1923	1924	1925	1926	1927
U. S. Rubber Co.	59,228	61,623	70,981	74,837	82,574	87,000
Firestone	1,077	1,077	1,077	1,077	6,077	21,077
Goodyear	*11,000	*13,258	15,258	15,347	15,436	*15,500
Continental	3,861	3,895	3,924	3,924	4,147	4,271
Hawaiian Sumatra	2,428	2,428	2,578	2,781	3,139	3,265
American	1,530	1,530	1,530	1,577	1,800	*1,800
Manhattan	1,192	1,192	1,192	1,392	1,488	1,488
Pahang	1,047	1,047	1,047	1,230	1,467	1,467
Selama-Dindings	1,005	1,227	1,183	1,173	1,260	1,463
Tanjong Olak	951	951	951	951	951	951
Basilan	797	797	797	797	797	797
Rio Grande	360	360	360	360	360	360
Zamboanga	110	110	110	110	110	110
Total	84,586	89,495	100,988	105,556	119,606	139,549
Annual increase		4,909	11,493	4,568	14,050	19,943

*Estimated.

PRODUCTION (POUNDS)

	1922	1923	1924	1925	1926	1927
U. S. Rubber Co.	14,307,000	14,631,000	16,728,000	19,670,000	22,900,000	25,677,000
Goodyear	477,466	585,737	1,224,009	2,745,554	4,026,466	*5,250,000
Hawaiian Sumatra	84,178	273,455	618,251	803,230	985,747	1,035,415
Continental	1,887	56,420	153,533	302,134	476,463	782,383
Pahang†	432,500	413,812	276,974	386,000	612,900	628,000
Philippine Is.		86,087	215,841	310,467	503,489	*600,000
Manhattan	324,219	393,390	449,925	454,482	448,106	504,825
Firestone				441,000	475,598	378,869
Selama-Dindings†	267,031	258,789	246,067	387,558	526,292	373,816
Tanjong Olak†	285,506	258,310	235,647	225,295	261,874	254,689
Total	16,179,787	16,957,000	20,148,247	25,725,720	31,216,935	35,484,997

*Estimated. †Subject to restriction.

ACRES IN TAPPING

	1922	1923	1924	1925	1926	1927
U. S. Rubber Co.	45,100	45,637	46,258	49,994	51,828	54,053
Firestone				1,077	1,077	1,077
Goodyear	*4,500	*4,700	8,967	14,223	14,114	*14,200
Continental		400	805	1,500	2,574	3,300
Hawaiian Sumatra	450	1,375	2,076	2,359	2,428	2,428
American			900	900	1,500	1,500
Manhattan	965	965	1,085	1,136	1,155	1,155
Pahang	952	952	952	1,135	1,231	1,231
Selama	*1,005	1,112	1,047	1,160	1,054	1,054
Tanjong Olak	951	951	951	951	951	951
Basilan, Rio Grande, Zamboango			*500	*700	*800	*700	*600
Total	53,923	56,592	63,741	75,235	78,612	81,549

*Estimated.

POUNDS PER ACRE IN TAPPING

	1922	1923	1924	1925	1926	1927
U. S. Rubber Co.	316	320	362	394	441	475
Firestone	...	...	...	409	441	351
Goodyear	*106	*125	137	193	285	372
Continental	...	141	191	201	183	237
Hawaiian Sumatra	187	199	298	340	405	425
American	...	...	...	...	...	320
Manhattan	337	408	415	400	388	436
Pahang	455	435	291	340	498	510
Selama	266	233	235	334	500	355
Tanjong Olak	300	272	247	237	275	268
Basilan	...	235	...	272	...	...
Rio Grande	...	...	...	310	...	...
Zamboanga	...	459	...	...	...	...

*Estimated.

Basilan Rubber Plantation Co.

Philippine Islands

Incorporated in the Philippines in 1911. Capital, 500,000 pesos ($250,000) of Swiss, German and American nationality. Estate situated on the northern shore of Basilan Island. Total area 2,500 acres, of which 800 acres in rubber and 650 acres in coconuts. Planting started in 1910 and first commercial tapping in 1915. Capital cost estimated at $200 per acre.

	Planted Acreage		Acres in Tapping	Production Lbs.
	Annual	Total		
1910	51	51	...	.....
1911	169	220	...	.....
1912	34	254	...	.....
1913	57	311	...	.....
1914	12	323	...	.....
1915	...	323	...	12,932
1916	230	550	...	32,982
1917	...	550	...	62,115
1918	...	550	...	105,000
1919	105	655	...	135,715
1920	142	797	...	142,326
1921	...	797	...	(no
1922	...	797	...	tapping)
1923	...	797	400	47,076*
1924	...	797	...	.....
1925	...	...	550	112,258†

*Six months. †Nine months.

Ford Industrial Co. of Brazil

Concession obtained in October, 1927, from the State of Para comprising about 3,700,000 acres, located along the east bank of the Tapajos River, about 70 miles southwest of Santarem on the Amazon.

Organized in Para, on Oct. 10, 1927, with a capital of $1,000,000, Companhia Ford Industrial do Brazil (Ford Industrial Company of Brazil), with 8,000 shares. The charter permits the company to acquire land, plant and harvest rubber, erect factories for manufacturing rubber goods, exploit all means of transportation, trade in all kinds of products, cultivate and exploit other products, undertake commercial and financial transactions, build schools, etc.

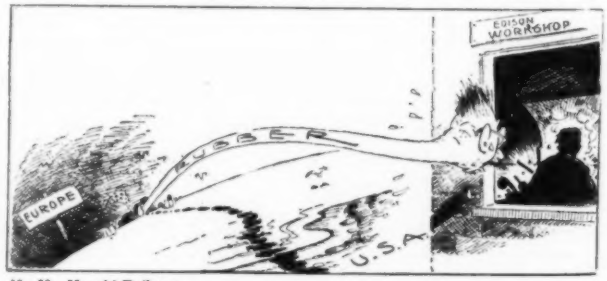
Rio Grande Rubber Estates, Ltd.

Philippine Islands

Incorporated in the Philippines about 1916. Paid-in capital 500,000 pesos ($250,000) from Scottish and American investors. In 1925, company acquired by an American, Thomas Wolfe. Estate, know as Kabakan, comprises 2,500 acres and is located in Cotabato Province. First planting was in 1912. In 1915, all but 25 acres were burned. Planting resumed in 1917.

	Planted Acreage		Acres in Tapping
	Annual	Total	
1913	..	25	..
1917	50	75	..
1918	50	125	.
1919	50	175	..
1920	50	225	..
1921	75	300	..
1922	60	360	..
1923	..	360	..
1924	..	360	..
1925	..	360	76

The 1925 output was 23,700 pounds, or 310 pounds per acre.



N. Y. Herald-Tribune

"What's this I hear about his looking for Me!"

Rubber Quiets Trolley Cars

By Subduing Vibration with Resilient Fittings, Vehicles are Made More Comfortable and Durable, and Rails and Rolling Stock Cost Less for Upkeep

STREET railway engineers, especially those concerned chiefly with rolling stock and track maintenance, are watching with close interest experiments being made in several American cities with various rubber fittings designed for lessening passenger discomfort and for reducing the numerous noises and mechanical shocks which are symptoms or causes of shorter car life, and which largely account for high cost of upkeep. It is becoming increasingly evident that the damage done to rolling stock through vibration is not a minor matter, as had been long supposed, but one of much importance as it involves the quickening of wear and the premature aging of parts. This is said to be evidenced most in cracked or broken axles, and to it is largely ascribed metal fatigue and fracture of metallic parts. As pain is said to be the cry of a suffering nerve, engineers often find a counterpart of such cry for relief in noisy mechanism.

Laying a rubber strip in the cover of a motor casing

While much has been done in the past few years in railway operation to lessen the destruction done through vibration by reducing the gross weight of cars, decreasing unsprung weight, using roller bearings, by finer machining of parts, and by using better structural material, it is only quite lately that the advantage of more ample cushioning seems to have been realized. It is in this connection that rubber has shown conspicuous merit in supplementing the action of springs in absorbing vibration. It has been used effectively between the halves of elliptic springs, on the end supports of semi-elliptic springs, on center bearings, on quarter bearings, and even on the hubs of a new type of car wheel, experiments with which in Baltimore have been described in this journal.[1]

Placing a rubber pad between truck bolster and center bearing

Rubber Aids Street Car Popularity

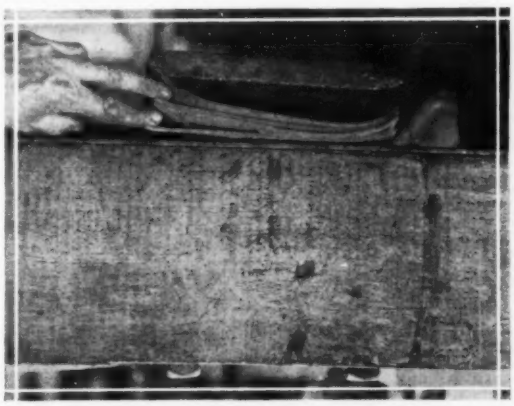
In many sections street car companies are finding it necessary to compete keenly with buses and motor cars. People are also demanding not only better looking but quieter and more comfortable street cars. Railway executives frankly admit that the clatter and rumble of the old type of cars have lost friends and passengers for their lines and have brought their service into marked disrepute.

In San Francisco a private corporation is forced to compete side by side with a city-owned transportation line, such as on Market St., where eight rails run parallel. Through using various din-damping devices the private company has been making a very favorable impression, and has been winning numerous passengers who heretofore had patronized only the city line; and better earnings and largely reduced costs are confidently expected when the new rubber and other vibration-killing fittings of seven cars on the McAllister St. division are applied to all the cars of the system.

How Insulation is Installed

Encouraged with the success of automobile engineers in

[1] "Rubber Tired Cars for Street Railways," INDIA RUBBER WORLD, Jan. 1, 1928, p. 56.



Rubber pads placed between bolster body and car frame

using pads of good quality rubber to insulate engines from frames of motor cars, similar pads 5-8 inch thick have been used between street car body and trucks and transmission of gear and other noises to the car body has been effectively checked. Pads are placed between the truck bolster and the center bearing. Four layers of like material are also applied between the bolster body and the car frame, thus suspending the car body on the outer ends of the bolster.

A thick strip of rubber is also set on the inner side of the motor casing which also prevents escape of noise from the master gear, which is first sound-deadened by having lead poured into a special groove cut on the inner side of the toothed edge. Another use of rubber is in the cushioning of the edges of doors and the recesses into which they slide. According to J. M. Yount, who has been supervising the experiments, the tests have been very satisfactory.

Wisconsin Line Being Rubber Fitted

The Wisconsin Public Service Corp., of Green Bay, Wis., has also been making some interesting and successful experiments with rubber fittings in an endeavor to eliminate car noise and jarring, 85 per cent of which can be traced, it is said, to trucks, wheels and gears. The wheels and gears of several cars have been lined on both sides of the web with eight rubber blocks which are bolted through holes in the web; and the blocks, Master Mechanic Joseph E. Bodoh reports, markedly reduce the shrill noises of the gears and of the wheels when brakes are applied or when a car is rounding a curve.

Large blocks of rubber have also been bolted to the journal box covers and gear cases, and long strips of rubber have been similarly fastened to the main truck members. The idea, Mr. Bodoh explains, is to thus absorb or neutralize the din that travels along the metal of the car frame. The side springs are carried on fiber washers and the gear cases are cushioned on rubber pads. Many minor uses of rubber have also been made in separating metal from metal to take up any stray frictional noises caused by truck members. Window rattling has been overcome with a small anti-rattling rubber roller developed for such use.

Rubber Hose Offsets Vibration

Rubber hose is used between tracks on the Toronto St. railway system to prevent the breaking of concrete-imbedded cross bonds through vibration caused by passing cars at the points where the heavy copper cables enter the terminal. Before the terminal is welded to the rail a 12-inch length of ½-inch garden hose is slipped over the end of each bond, the opening at the terminal end is stuffed with waste, and that of the cable end is covered with electricians' tape. Thus, if a rail gets loose in the concrete bed, any movement is taken up in the free length of the cable within the rubber tubing and the bond will not break at its union with the steel terminal.

Recording Roll Heat of Calenders

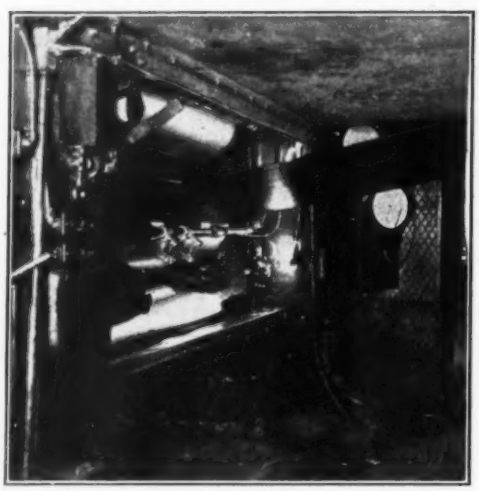
Device for Automatically Charting Surface Temperature of Calender Rolls

C. E. Maynard[1]

THE development of high tensile and reinforced stocks for tire building and other high quality rubber goods has emphasized the need of close regulation of calender roll temperatures. Various instruments for taking roll surface temperatures have been devised, one of which is here pictured applied to a sheet stock calender.

The instrument, which may be seen attached to a cross bar in front of the middle roll of the calender, is connected with a Bristol automatic recording thermometer by which the heat is continuously charted for reference.

The thermometer bulb portion of the device is located on a cross bar between the end frames of the calender. This bar can be rotated to about 30 degrees by a handle on the extreme right end of the bar thus making it possible to withdraw the bulb shoe several inches away from the calender roll in case it is necessary at any time to run stock around the roll.



Surface Roll Temperature Recording Device

The device itself consists of an aluminum or bronze shoe in which is set a vapor filled bulb connected to a standard Bristol recording clock. This shoe is so designed that the distance between it and the calender roll can be varied to any desired extent. The adjusting screw is just in front of the spring. The shoe containing the bulb is positioned paralled to the calender roll thus giving the bulb the maximum amount of exposure to the heat of the roll. It has been found that a somewhat careful adjustment is needed in setting the shoe against the roll so that frictional heat will not be developed or too much of an air gap be allowed thus giving a false reading of the temperature. Just above the thermometer device a sheet of stock is shown leaving the calender and below the instrument the mixed rubber stock supply is feeding into the machine between the two lower rolls.

By means of this instrument it is not only possible to obtain data for correctly specifying the working temperatures for sheeting various stocks but to record the heat of actual practice. It is found that considerable variation exists as regards the temperatures required for the best working of different stocks.

[1] Manager, Process Development Department, The Fisk Rubber Co., Chicopee Falls, Mass.

Liberia's Planting Progress

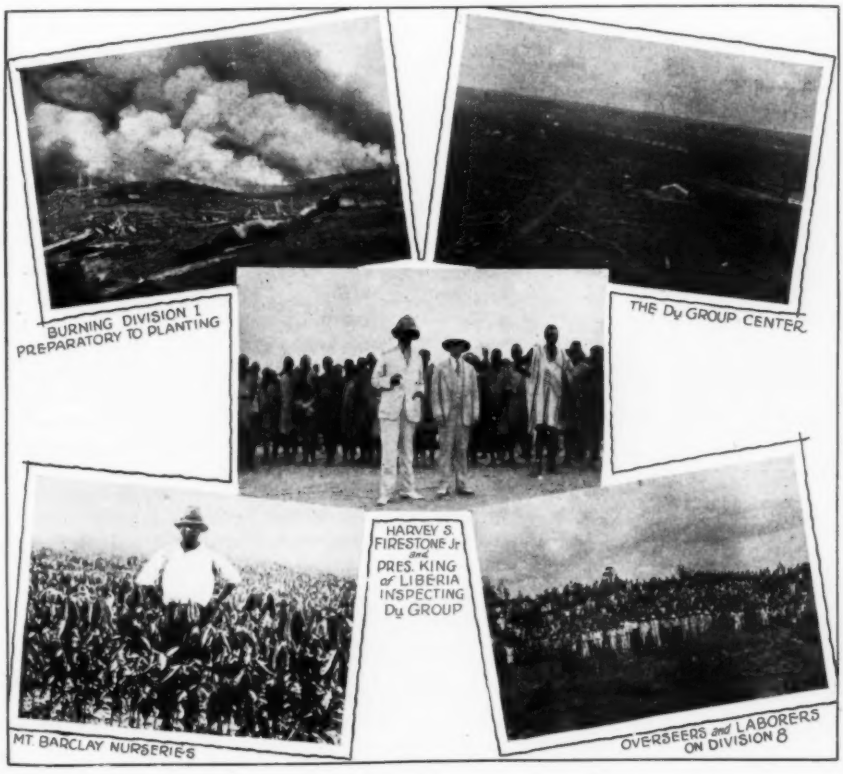
Firestone Company Breaks Record in Clearing 100,000 Acres and Setting Out 30,000 in Trees—Negro Help, Exceeding Demand, Outranks Coolie Labor—Duplicates Best Brazilian Conditions—Rubber Cost Low

THAT the Liberian rubber growing enterprise, Firestone Plantations Co., of which he is vice president, is making very satisfactory progress since its start late in 1924, is the statement made by Harvey S. Firestone, Jr., to the INDIA RUBBER WORLD. Mr. Firestone returned recently from a four months' stay in Liberia and has since been directing operations there daily by means of the company's own radio telegraph service between the big African plantation and the Firestone works in Akron.

He states that the company has a force of 128 engineers, doctors, clerks, accountants, storekeepers, and skilled tradesmen, most of whom are American, and over 15,000 native Africans. It has been asserted that the utmost number of laborers that could be had in Liberia would be but 30,000 and that the land they could cultivate could not exceed 100,000 acres. Mr. Firestone says that the labor supply is not only ample but is likely to continue so for a long time to come. In fact, the problem is not one of enough help but of taking care of the excess. The news has penetrated a great part of the West Coast that laborers are needed in Liberia and the infiltration is large and constant. The natives have learned, too, that labor can get steady work and actual pay at the new plantations. Often they did not fare so well in the past, when a rubber worker got or was promised 9 pence daily with 3 pence for subsistence.

Not only are Africans available at wages as low as those paid to far eastern coolies but the former, Mr. Firestone says, are huskier, able and willing to do more work, and quite as efficient. At any rate, he says, his company has never regretted breaking off negotiations that would have put the American plantation under less friendly auspices in Borneo and into which island it would have had to import coolies at $100 a head and guarantee their keep for a long time. The Africans respond well to good treatment. Many of them are employed in building plants for power, lighting, and refrigeration, constructing wharves, warehouses, and 150 miles of roads, and erecting field offices, homes, hospitals, trade and common schools.

The section developed on the Du River, 45 miles from Monrovia, the capital, has numerous modern bungalows with many stores, shops, and also schoolhouses that would be a credit to a model, thriving, small American town; and here is the radio plant that communicates daily with Akron, 4,600 miles away, and also supplies much general information. A big power plant purifies drinking water for the white forces and provides an ample supply for general needs. A modern sanitation system is also being installed. American family life is being reproduced with all the necessities and most of the comforts of home. The social atmosphere afforded by the well-educated staff, their wives and families is said to be very pleasant; and good roads being built for the 200 motor cars in use also help much to make living conditions agreeable. Churches and places of entertainment are being planned. In the Cavalla section, which, like the Du, embraces some 50,000 acres, 250 miles distant, a similar well-organized settlement with a radio station is also being rapidly established.


BURNING DIVISION 1 PREPARATORY TO PLANTING
THE Du GROUP CENTER
HARVEY S. FIRESTONE Jr. and PRES. KING of LIBERIA INSPECTING Du GROUP
MT. BARCLAY NURSERIES
OVERSEERS and LABORERS ON DIVISION 8

While the main purpose is rubber culture in a vast territory, the development also comprehends a considerable extension of agriculture, communication, and education. The chief food of the natives is rice, which they raise in abundance, but the company intends to soon take up farming in

general and, with American stock, to go into chicken and cattle raising. Water communication will be early developed, and to link the plantations the company has already put in service a Diesel motor ship, the Duvalla. Later it will add other vessels for river transportation.

Much progress is being made in the native schools. The many boys being taught trades show not only eagerness but much aptitude in learning. The company is cooperating with the government and the American Advisory Committee on Education in Liberia in extending public school instruction, even to the extent of having a special issue of textbooks printed for the natives. Very important, too, owing to the inadequate stocks of native and other traders, is the constant movement of varied supplies from the United States, the goods being distributed by the company at little more than cost through its own chain of stores. Already the Firestone enterprise has given a marked impetus to general commerce on the African west coast and the hinterland.

Of the 1,000,000 acre concession, the Firestone company has already cleared one-tenth, that is, two 50,000 acre sections. The 1929 schedule will probably increase cleared areas to nearly 150,000 acres. With facilities that are now being provided it will be possible to plant in excess of 15,000 acres yearly, which figure the company reached last year. This brings the acreage set out in trees to over 30,000. Forest and jungles are cleared in a thorough manner with the aid of nearly a hundred cars and tractors and thousands of axes, shovels, and other implements shipped from the United States. An up-to-date nursery is maintained near the Cavalla River and from which have been set out 1,500,000 well-bred Hevea seedlings which will be tappable trees five years hence.

Originally about twice that number was planted, but judicious culling reduced the total to their present stand. The company expects to set out as many more plants this year. The practice of double burning of cleared refuse will be continued, as it is said to have proved of great advantage in ridding soil of mold and other undesirable growths and insuring healthy plant conditions.

As is well known, in the territory of Acre in Brazil and close to Peru and Bolivia the Hevea flourishes under conditions favorable to attaining great size and vigor, with maximum yield of fine quality latex. In most of Liberia, Mr. Firestone says, conditions are strikingly like those of Acre. In both places much of the land is high and well drained and the soil in both places is very much alike in quality and texture. The Liberian planters appear to be spared, too, the trouble of soil conservation, which gives so much anxiety in the Far East. Moreover, the Liberian trees show a rapid, healthy growth, and suffer to a negligible extent from brown bast, leaf rot, root fungi, and such diseases. Any tendency toward such ailments appears to be checked naturally by the two to three months of dry weather such as is also a climatic feature of Acre. Even the latex from trees from an old, small plantation which the company acquired shows similar analysis and slowness in coagulation when compared with the high quality Acre latex.

Acre is said to have one of the most healthful of tropical climates; and Liberia has, according to United States government investigators, less atmospheric humidity than the rubber-growing regions of the Orient, the air having a noticeably drier feel, enabling workers to do more with less effort than in the more muggy atmosphere of the far eastern rubber low lands. Records kept at the old plantation at Mount Barclay show an average rainfall for a year of 147.85 inches, with lows of 2.14 in January, .08 in February, .99 in March and a high of 32.8 in June. The average temperature is about 75 degrees F. and the nights are usually cool and comfortable.

From the old plantation, latex is now gathered, prepared as dry rubber, and shipped at a total cost well below 15 cents a pound, Mr. Firestone says, and with better stock development, improved technique, and newer equipment the chances are that the cost in the future will be much lower. Even on well-managed far eastern estates the cost often exceeds 20 cents. The trees are yielding well over 500 pounds to the acre, as compared with a world-wide average of about 350 pounds. Much economy in shipping rubber to the United States will be effected, Mr. Firestone says, through the intended operation of the company's own vessels between Monrovia, Liberia, and New York, making the trip in two weeks. The attitude of the Liberian Government, he says, is particularly encouraging, not only to his country's undertaking but toward all American enterprises.

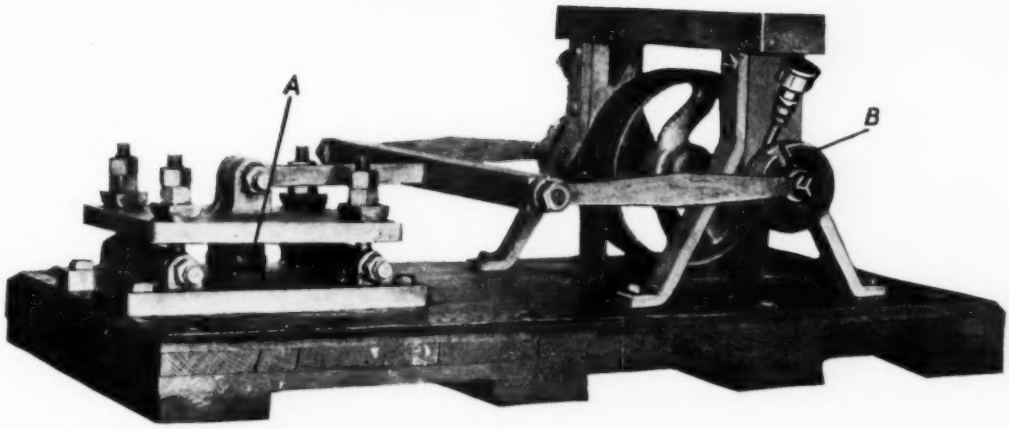
Land clearing for rubber planting was started in Liberia by a British concern, the Liberian Rubber Corp., Ltd., in 1907, under Sir Harry H. Johnston, and it also dealt much in wild rubber. On its main tract at Mount Barclay, about ten miles from the coast, some tapping was done before the war, and in 1915 latex was being taken from 50,000 trees. About five years later the company meeting a setback in trade had to relinquish its holdings to the government, the cession including about 125,000, 7 to 14-year-old trees, a factory and other buildings, and much machinery. The government tried to operate the plantation but soon abandoned it. In 1924 a representative of the Firestone Tire & Rubber Co. visited the property, which was fast reverting to jungle, and made terms with the government to take over the old plantation with other lands totaling 1,000,000 acres on a 99-year lease, outright purchase by white buyers being forbidden by the constitution of the negro republic, established under American protection.

That there is still much land available for rubber raising or agricultural enterprises is evidenced by the fact that the republic has an area of 25,600,000 acres.

Sound Dampening Railways with Rubber

A SECOND mile of track on the F. M. S. Railway in Selangor, Federated Malay States, is being rubberized with "Linatex," a tough, direct-from-latex, 95 per cent rubber material produced by the Wilkinson Process Rubber Co., Ltd., Batu Caves, F. M. S., with the object of lessening noise and damage caused by rolling stock. It is stated by Managing Director B. Wilkinson that while tests have not yet been completed, results obtained thus far are very encouraging. Using pads of the same material between sleepers and rails, Professor A. M. Low, British acoustical expert, is also carrying out experiments in sound damping on railways in England. A successful conclusion is reported for other experiments in sound absorption on railways with the result that several British transportation concerns are making the new rubber cushioning part of their standard equipment. Among the applications are body cushions of various sizes set between the trucks or bogies of coaches and window cushions and buffer pads; and motor car manufacturers are using rubber effectively in the form of pads between suspension points of engine and chassis.

"Linatex" is made by adding finely powdered sulphur and other chemicals to latex and macerating and machining the coagulum, which undergoes a degree of vulcanization at ordinary temperatures, into a thin crepe-like rubber. After drying, the sheets are laminated through heavy calenders into thicknesses for various uses, and in some forms reinforced with wire mesh.



Compression Flexometer

Device for Testing Vibration Absorption

FRANZ D. ABBOTT

The Firestone Tire & Rubber Co.

THE following abstract from the author's paper entitled "Machine for Testing Rubber Products Used to Absorb Vibration," describes a new testing machine of interest to rubber technologists.

The commonly used physical tests such as stress at break, stress at 400 per cent elongation (modulus), ultimate elongation, set at break, set after repeated stretch, and static compression-set fail to evaluate properly the resistance of vulcanized rubber to dynamic fatigue of flexure under compression, whereas flexure-set as determined in the compression flexometer herein described does evaluate stocks properly as determined by service and dynamometer tests.

Degree of cure has a decided effect on the degree to which vulcanized rubber withstands various service conditions. Nevertheless, many properties, particularly hardness, show no decided change with relatively large variations in cure. Hardness of a rubber product may be defined as the resistance which the surface layers of this product offer to indentation by a penetrating element under a predetermined load.

It is also to be noted that motor supports, rubber spring shackles, torque insulators, balls for universal joints, and similar parts undergo permanent set due to a greater or less degree to flexure under compression.

Although there have been static compression tests for permanent set under a definite load and also under a definite distortion, there is a lack of uniformity in procedure and in results. Because of these unsatisfactory conditions a new machine, called a compression flexometer was designed, which tests the resistance of vulcanized rubber to flexure under compression.

The compression flexometer shown herewith consists of a fixed bottom plate with rocker bolts hinged to it which pass through a top plate, and is attached to a driving device. By screwing nuts down on these rocker bolts the top plate may be made to produce a compressive load on a test piece A placed between the two plates. The top plate is made to oscillate at 800 cycles per minute. The oscillations are secured by setting the thrust arms off center with respect to the drive shaft. It is possible to increase the range of oscillatory movement (throw) to over 10 centimeters (4 inches) overall by means of the slots cut in the eccentric collar shown at B.

Tests recorded in this paper were made with a 0.95 centimeter (3/8-inch) overall throw. The compressive load is produced by the weight of the top plate and a component part of the thrust arms (a total of 13.6 kilograms or 30 pounds) plus that secured by tightening the nuts shown on the top plate. A standard load is chosen for a given size of test piece. The tests are run at constant distortion. For a purely technical study of rubber stocks, involving the effect of pigments and other ingredients, tests can also be made under a constant load by means of lead weights fastened to the top plate.

The duration of the tests under various conditions, although arbitrarily chosen, is such that the permanent set developed in various high-quality stocks is great enough to insure a low percentage error. Tests on materials to absorb vibration are stopped far short of complete physical breakdown or blowout, which is, in general, an explosive rupture of the test piece due to gaseous and liquid products produced by the heat of flexure.

The test piece, which has been molded, or cut and buffed, to the desired shape and size, is carefully centered on the bottom plate of the compression flexometer. Care is taken that flexure and loading occur in the same respective directions as in service. The top is then carefully lowered onto the sample while the machine is at dead center. The desired compression uniformly secured is obtained by means of the nuts on the top plate. The flexing is then started. Ordinarily the sample is removed from the flexometer immediately at the conclusion of the flexure and allowed to cool one hour. The test piece is then bisected in a vertical plane in the direction of flexure. The least height of this cross section in the direction of the loading is measured. The loss in height is reported as per cent flexure-set.

[1] Published by permission of *Ind. Eng. Chem.* Presented before the Division of Rubber Chemistry at the 75th Meeting of the Am. Chem. Soc., St. Louis, Mo., April 16 to 19, 1928.

With stocks of the pure gum type virtually no set is developed under the ordinary conditions of test. In order to produce flexure-set in such stocks the severity of the test must be increased. This may be done by increasing the pressure, increasing the duration of the flexure, increasing the amplitude of flexure, or, by allowing the test piece to stand under load in the machine at the completion of the flexing. If the last method is adopted the machine should be stopped at dead center. A combination of any of these four methods is, of course, possible.

The accuracy obtained with this machine has been within plus or minus 1 per cent flexure-set. A large portion of the error involved is due to the fact that no effort has been made to measure the recovered height of the sample with an accuracy greater than 1 per cent. A good idea of the accuracy can be secured from the data of Table I. If the flexure-set values of two different stocks check as close as 3 per cent, the tests should be repeated before concluding that one stock is better than the other.

TABLE 1—ACCURACY

Stock	Flexure-Set Sample 1	Flexure-Set Sample 2	Time of Flexure Hours	Deflection Per cent
8	36.0	36.0	2	55.5
3	34.4	34.4	2	50
30	29.5	31.2	2	50
1	43.1	41.7	2	50

The tests recorded in Table I were made on test pieces cut from laboratory compression slabs ¾ by 1⅝ by 1 inch.

Acidseal Paints

Anti-Corrosive Thermoprene Products

THE plastic material known as thermoprene is a patented product discovered and developed in the research labortories of The B. F. Goodrich Co. It is obtained from rubber by its chemical conversion into a tough thermoplastic resembling gutta percha and hard balata.[1] It is a very good adhesive and the basis of the Vulcalock process for adhering of rubber to metals. It now appears in a new development of extended industrial application, namely as a particularly valuable ingredient of paints and lacquers. In this connection thermoprene is particularly valuable because of its peculiar characteristics of adhesion, elasticity and chemical resistance. Its great adhesive property effects an extraordinary bond between the protecting acidseal paint film and the surface to be covered. The material retains many of the elastic properties of rubber, producing films that are not brittle. The inherent chemically resistant properties of rubber are retained by thermoprene, thereby giving products that are both acid and alkali proof and non-absorbent to water.

In the manufacture of acidseal paints, various pigments are incorporated with thermoprene, and the resulting mixture dissolved or "cut" with solvents. These solvents vary depending on the service required, but are usually turpentine, petroleum spirits, toluol or solvent naphtha. Brushing or spraying consistency is easily produced.

Acidseal paints are now in use in the following general services: (1) Protection of structural steel, pipe lines and machinery in chemical plants, rayon plants, etc., where acid or alkali fumes are a source of corrosion; (2) Wall paint in plants where chemical fumes destroy ordinary paints; (3) Paint for tank cars and drums where direct spillage now causes frequent repainting; (4) Protection of magnesium-aluminum alloys; (5) Coating for inside of head boxes in paper mills; (6) Coating for inside of wood, steel and concrete tanks; (7) Protection for laundry machinery against chemicals used in laundry processes; (8) Protection of metal sheets which are subject to flexing; (9) Priming coat for nitrocellulose lacquer films.

To meet the special requirements of these services four varieties of paint are prepared, the first for interior walls and ceilings, the second for coating metals, wood, concrete, brick, etc., the third for similar surfaces contains aluminum bronze as the pigment, and the fourth is intended as a special priming coat for automobile body manufacturers' use and under lacquer films in miscellaneous industrial work and as a priming coat for "metal-to-metal" contacts.

[1] *Indus. Engr. Chem.*, Feb., 1928.

Hexalin Acetate

A Solvent for Rubber and Celluloid Proofed Coatings[1]

A SUCCESSFUL combination proofing stock for auto topping, artificial leather and general weatherproofing of fabrics can be prepared by the use of hexalin acetate as a solvent.

Hexalin acetate is a water white liquid with the "fruity" odor, characteristic of the esters. It is produced from hexalin in the same manner that other acetates are produced from other alcohols. It has a boiling point of 175 to 185 degrees C., specific gravity .95. It is nonmiscible with water and distills without decomposition and has great possibilities as a solvent.

Rubber is among the products soluble in hexalin acetate. A common solvent for nitrocellulose and rubber is unique and the possibility of making a homogeneous combination of celluloid and rubber in one mass practically opens a new field of commercial products. All the developments from such a combination can hardly be foreseen but the primary interest lies in the field of lacquers and coatings. For example, the ability to add rubber to lacquers increases the scope of their use, in that they will become even more waterproof and much more durable and flexible. Another important use for such a combination is in the production of artificial leathers and waterproof coatings for cloth. The coating of the fabric is done in spreading machines like those in common use by rubber and artificial leather manufacturers. The number of coatings vary according to thickness desired. Three coats and seven coats are the normal extremes.

As the coated material comes from the machine it is run through a hot box to accelerate the evaporation of the solvents. The temperature in this is usually about 167 degrees F. No other curing is considered necessary nor is any attempt made to vulcanize the rubber in such a combination. The corresponding ketone of hexalin, namely cyclohexanone, will also accomplish celluloid and rubber combination and for some purposes may be more useful. For one thing it evaporates much more readily than hexalin acetate. Futhermore cellulose acetate as well as nitrocellulose is soluble in it.

It is interesting to note that when subjected to weather tests the combination of cotton and rubber has greater resistance to aging than fabrics similarly coated with either rubber alone or lacquer alone.

[1] Data from Newport Chemical Works, Inc., Passaic, N. J.

Synthetic Hopes Raised

Synthetic rubber enthusiasts may get fresh encouragement from the announcement that in Germany H. Plauson, noted physicist, has discovered a mode of producing chemical rays through a modification of the Coolidge and Lenard tubes that can polymerize isoprene, butadiene, and their homologs and analogs to caoutchouc with great rapidity, and that can even convert rubber solutions into an insoluble state without the use of sulphur.

Drinking Water Systems

for Rubber Mills—II[1]

Fig. 1—Water Cooler and Fountain Using Ice

THE best system of water cooling and distribution for a rubber mill will depend upon the size of the plant and other local conditions. In case ice is to be used, coolers of the general type shown in Fig. 1 may be employed, in which the drinking water passes through a coil submerged in melting ice, before it reaches the bubble fountain. Other coolers of this form make use of mechanical refrigeration by simply using the ice tank as an evaporating chamber for the ammonia or other refrigerant. Individual coolers of this general type are particularly adapted to plants of small and medium size and also where the arrangement is such that a single fountain will accommodate a considerable number of people, as in tall buildings of comparatively small ground area, so that two or three coolers on each floor will be sufficient.

The general piping layout for a system of this kind is shown in Fig. 2, in which case the water supply from the city main passes through a filter or other purifying equipment as may be necessary, and then to the cooling coil, as indicated.

The refrigerating pipes are shown at the left, the liquid ammonia entering the top of the expansion chamber while the gas or suction connection is at the bottom.

In large plants, the simplest and most compact arrangement is to use a single cooler of sufficient capacity for the entire work, and locate this close to the refrigerating machine at some central point, as in Fig. 3. This reduces the length of the various supply loops to a minimum, equalizes the flow, and keeps the frictional resistance within practical limits.

Systems of Piping

In order to keep the water cool at all times at the drinking fountains, and to prevent waste of both time and water in waiting for it to run cold a continuous circulation is maintained throughout the piping system, the water passing through the cooler often enough to keep its temperature below the allowable maximum, which is usually taken as 50 degrees.

A common layout, where the supply pressure is sufficient to raise the water to the top of the building, is shown diagrammatically in Fig. 4. A small centrifugal or triplex pump is used to force the water through the supply circuit, the only pressure head to be overcome in this case being the friction resistance of the pipe. Make-up water for replacing that consumed and wasted is drawn into the float-tank automatically by means of a ball-cock connecting with the city pressure, this tank being placed from 10 to 12 feet above the highest fixture in order to produce the necessary flow. The supply circuit is in the form of a loop, and the bubble fountains or faucets are kept as close to the main line as possible in order to reduce waste of water. Arrangements of this general type are called closed systems.

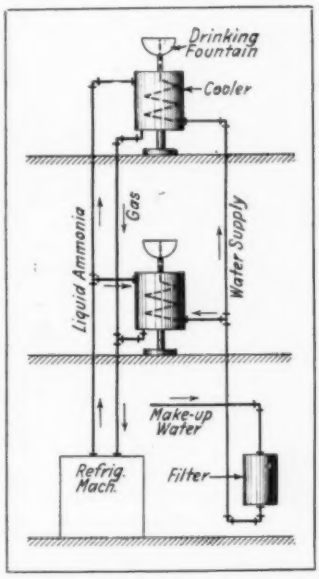


Fig. 2—Individual Coolers with Mechanical Refrigeration

Where the pressure in the city main or other source of supply is not sufficient to raise the water to an elevated float-tank, arrangements similar to those shown in Figs. 5 and 6 may be used, which are called open systems, and employ a vented cooler with a float-tank beside it for automatically supplying make-up water as needed to maintain a constant water level.

The necessary pressure at the fixtures in Fig. 5 is obtained by causing the circulating water to pass through an elevated balance tank on its way back to the cooler. When there is not sufficient elevation above the highest fixtures for a balance tank, this may be omitted and the necessary pressure produced by inserting a relief valve in the return pipe just above the cooler, as shown in Fig. 6. In all other ways the layout is the same as in Fig. 5.

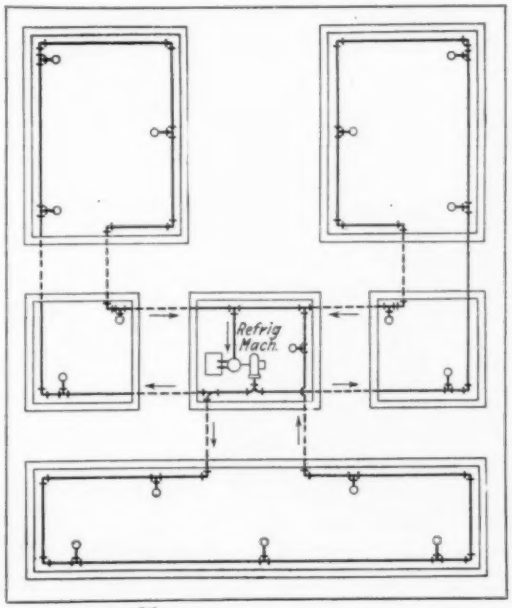


Fig. 3—Distributing Layout for a Large Plant

Refrigerating Equipment

The form of refrigerating equipment will depend somewhat upon the size of the plant, but even in extensive establishments large machines are not called for. Simple, self-contained outfits for water cooling have been shown in the first part of this article.

Another form, which runs into larger capacities, is illustrated in Fig. 7.

This is of the semi-portable type, the complete machine being mounted upon a single base in the smaller sizes, while in the larger ones the condensing coils are usually hung upon an adjacent wall. The compressor is commonly driven by a belted motor, and the whole equipment

[1] Continued from INDIA RUBBER WORLD, Aug. 1, 1928, pp. 65-67.

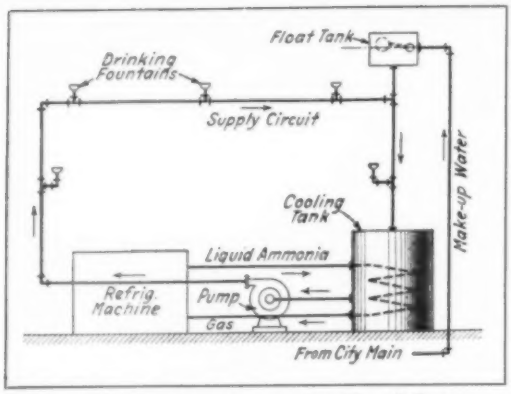


Fig. 4—Piping Arrangement for Closed System

placed under automatic control. In some cases, where there is a surplus of exhaust steam throughout the year, the absorption system will be found more economical to operate, although the cost for power will not be large in any case.

The cooling tank is an important detail and is usually furnished ready for use as part of the refrigerating equipment, so that matters of construction are not of particular interest to the user. It is important that the entire tank, including top and bottom, be thoroughly insulated with a covering suited to its purpose, which may consist of block or slab covering finished with cement, or cork or similar filling inside a wooden sheathing.

The work of the pump depends largely upon whether it has simply to circulate the water against the friction of the piping or must raise it to a balance tank, as in Fig. 5, or pump against a relief valve. Small electrically-driven centrifugal pumps are particularly well adapted to this purpose, although plunger pumps of the triplex type are often used. A typical arrangement of cooler and pump is shown in Fig. 8.

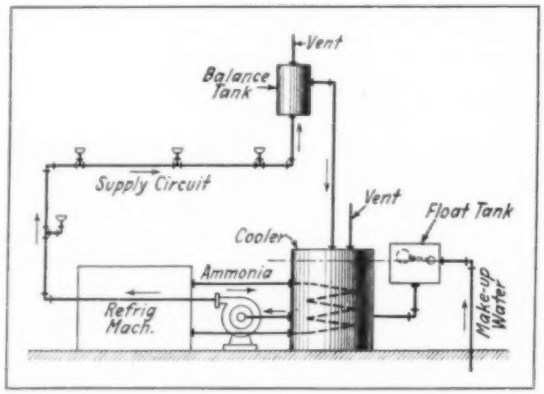


Fig. 5—Open System Employing Balance Tank

Refrigerating Capacity Required

Refrigerating machines are rated in tons of refrigeration per 24 hours, one ton capacity being equivalent to the abstraction of heat at the rate of 12,000 B.t.u. per hour. The heat to be absorbed from the water is made up of two parts: (1) that required to cool the make-up water down to a temperature of 45 degrees; and (2) that necessary to prevent the circulating water in the piping system from rising above 50 degrees.

In case of the first item it is customary to assume a maximum temperature drop of about 75 — 45 = 30 degrees which requires the abstraction of 8.3 × 30 = 250 B.t.u. per gallon (nearly). The second item depends upon the size of pipe, length of run, type of insulation, and temperature of the surrounding air. For ordinary conditions, with first-class pipe covering, and an air temperature around 90 degrees, the heat to be absorbed per hour to keep down the rise in temperature in the system, may be found by the following formula:

$$H = L \times F, \text{ in which}$$

H = heat to be absorbed, in B.t.u. per hour.
L = length of supply circuit, in feet.
F = a factor depending upon the size of the pipe, which may be taken as follows: ¾" pipe F = 6.3; 1" pipe F = 6.8; 1¼" pipe F = 7.8; 1½" pipe F = 8.4; 2" pipe F = 9.7.

EXAMPLE. A rubber mill requires a maximum of 300 gallons of water per hour for drinking purposes; this being distributed through two loops of 1-inch pipe, each 1,500 feet in length. What should be the capacity of the refrigerating machine?

SOLUTION. The heat to be abstracted in cooling the make-up water is 300 × 250 = 75,000 B.t.u. per hour. For offsetting the heat absorption of the distributing circuit we must abstract (1,500 + 1,500) × 6.8 = 20,400 B.t.u., making a total of 75,000 + 20,400 = 95,400 B.t.u. per hour, and calling for a refrigerating capacity of 95,400 ÷ 12,000 = 8 tons.

PIPE SIZES. The size of the circuit main for supplying a system of drinking water is usually based on a velocity of flow which shall not exceed 3 feet per second, or 180 per minute. Sizes obtained by this method must always be checked for friction head, which, for a given velocity, varies with the length of pipe and number and character of the bends and fittings. In general, the distributing system should be divided into sections or loops, so that the length for a given size will not exceed those in Table 1. The pipe capacities in this table are based on velocities not exceeding 3 feet per second. The friction heads for 100 feet, and also for the maximum allowable length of circuit are also given, as indicated.

The figures below are not exact, but are sufficiently accurate for all practical purposes. They are for straight runs of pipe, and for average conditions the total friction head in the last column should be increased from 10 to 15 per cent to allow for bends. Furthermore, these figures are only for the frictional resistance of the pipe, and do not include lifting the water to the balance tank, or opening the relief valve, as required in the arrangements shown in Figs. 5 and 6.

TABLE I

Pipe size Inch	Gallons per minute	Velocity feet per second	Friction head per 100 ft.	Maximum length of circuit ft.	Total friction head for circuit ft.
¾	5	3	7.5	800	60
1	7.5	2.8	5.4	1,200	65
1¼	12.5	3	3.4	2,000	68
1½	15	2.7	2.3	2,500	58
2	25	2.6	2.0	3,000	60

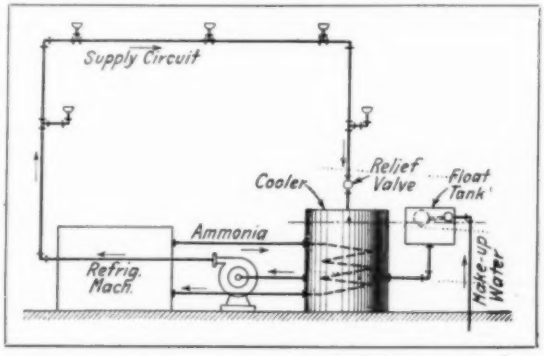


Fig. 6—Open System Employing Relief Valve

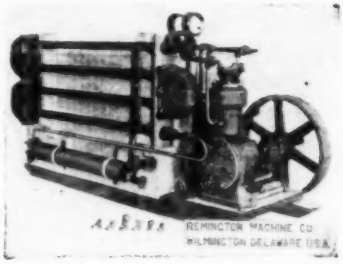


Fig. 7—Small Refrigerating Machine

Quantity of Water Circulated

The quantity of water to be circulated through the system by the pump is made up of two parts, that consumed for drinking purposes and an additional amount for keeping the temperature at 50 degrees or below in the piping. The first of these is easily determined by methods previously given, while the latter is computed as follows. Taking the same example as before, it was found that 20,400 B.t.u. were absorbed per hour by a line of 1-inch pipe, 3,000 feet in length. Since 1 B.t.u. is required to raise the temperature of 1 pound of water 1 degree, and the temperature of the water in the system is to be allowed a maximum rise of 5 degrees, it follows that the quantity of water to be circulated per hour to produce this result is 20,400 ÷ 5 = 4,080 pounds or 4,080 ÷ 8.3 = 492 gallons. The requirements for drinking purposes in this case were 300 gallons per hour, thus making a total of 492 + 300 = 792, or practically 800 gallons per hour to be handled by the pump.

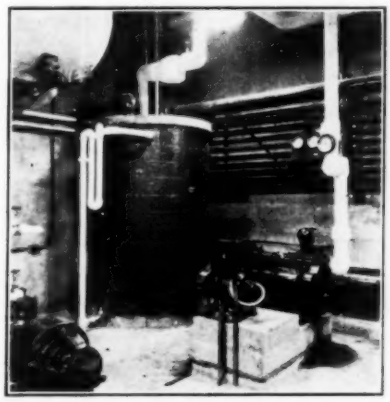


Fig. 8—Cooler and Circulating Pump

In checking up on the pipe size in this case, we have 800 ÷ 2 = 400 gallons per hour, or 400 ÷ 60 = 6.6 gallons per minute passing through each circuit. Referring to Table I we find that a 1-inch pipe will carry 7.5 gallons with a velocity of 2.8 feet per second, so that this size is ample for the assumed conditions and allows a small factor of safety for relieving the work of the pump. If ¾-inch pipe was used, the velocity would exceed 3 feet per second and the friction head would run up excessively on the 1,500-foot circuits and so increase the cost of pumping.

Power for Operating Pump

The capacity of the pump depends upon the quantity of water consumed and circulated, as just described, but the power required for operating it takes into account both the volume handled and the "lift," or head pumped against.

The general formula for determining the required power is:

$$\text{H.P.} = \frac{8.3 \times G \times H}{33{,}000 \times E}, \text{ in which}$$

H.P. = horsepower required.

G. = gallons pumped per *minute*.

H. = the head pumped against, in feet, including the frictional resistance, as given in Table I, and the lift to the balance tank in Fig. 5, or the equivalent lift for opening the relief valve in Fig. 6.

E = the efficiency of the pump, which may be taken as 50 to 60 per cent, depending upon the size and type.

EXAMPLE. What horsepower will be required to pump 800 gallons of water per hour through two loops of 1-inch pipe, each 1,500 feet in length, assuming it to be lifted to a balance tank 50 feet above the pump?

SOLUTION. The quantity of water to be pumped through each circuit is 400 gallons per hour or 6.6 per minute. Referring to Table I, we see that it requires a head of 65 feet to force 7.5 gallons per minute through a pipe 1,200 feet in length. Assuming the resistance to be practically the same for the delivery of 6.6 gallons through a circuit 1,500 feet in length, and increasing it 10 per cent for the effect of bends and fittings, we have a total head of (65 × 1.10) + 50 = 122 feet to be pumped against.

The total quantity of water to be handled by the pump is 800 ÷ 60 = 14 gallons per minute (nearly). Substituting these values in the formula, and assuming a pump efficiency of 50 per cent, we have $\text{H.P.} = \frac{8.3 \times 14 \times 122}{33{,}000 \times 0.5} = 0.86$ or practically 1 horsepower.

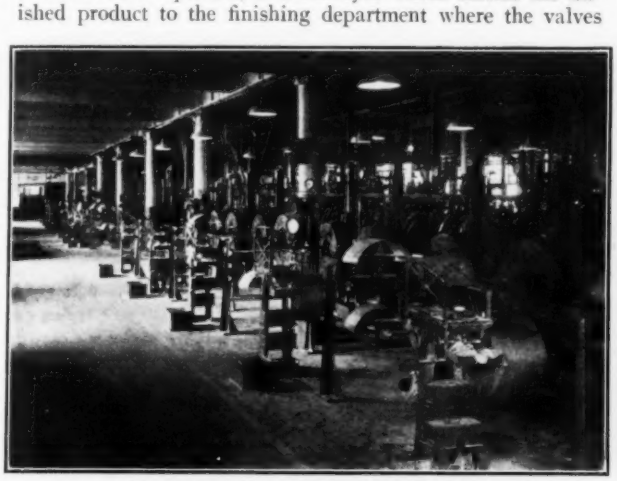
With the data given, it is a comparatively simple matter to apply it to a considerable range of conditions with a sufficient degree of accuracy for all practical purposes, and adjust the equipment to obtain more exact results if desired.

Molded Inner Tube Equipment

Automatic Tube Molding Machines

THERE is a pronounced tendency in the production of inner tubes to depart from the old way of making tubes on straight mandrels in favor of newer methods by which a circular tube can be made either by steam curing on a circular mandrel or by molding endless in a special press. In the illustration, lined up between the posts, is shown a long line of inner tube molding presses as installed in the plant of one of the leading American tire companies. In front of these presses may be seen the tube making stands and arched racks that are used for holding the tubes before and after curing.

In this particular plant tubes are made from calendered stock on building drums located directly in front of the automatic molding machines. After making up the raw stock tubes are laid on the arched racks or supports back of the drums from which the molding machine operator takes them for insertion in the mold. Behind the tube molds, but invisible in the picture, is a conveyer which carries the finished product to the finishing department where the valves



Fisk Rubber Co.'s Tube Molding Room

are attached. The same conveyer also takes the completed goods and delivers them to the inspection and packing department.

EDITORIALS

Settling Labor Disputes Amicably

AT a time when so much attention is being focussed on plans for outlawing war and promoting international peace, it would be well to remember that it is scarcely less imperative for us to do all in our power to insure domestic industrial tranquillity. Our foreign competitors may not wish us ill, but many of them would not shed tears were capital and labor in this country often embroiled in bitter wrangling over wages and working hours and involved in wasteful strikes and lock-outs. It is obvious that such antagonism could offset our advantage in efficiency and give aid to overseas rivals.

This reflection is prompted by a recently completed report, "Postponing Strikes—a Study of the Canadian Industrial Disputes Act," issued by the Russell Sage Foundation, covering a period of eighteen years. The success of the Dominion's intervention in labor disputes has been especially marked in the case of the railroads, strikes having been ended or averted in 95 per cent of the cases considered; while a score of 90 per cent has been made in the handling of other public utilities' disputes. Even 50 out of 61 coal mining cases arbitrated have been ended with evident satisfaction to both sides. It is observed, too, that an important factor in achieving an early and agreeable solution of a labor difficulty has been fundamental soundness in the industry involved; and the more closely an enterprise has approximated such condition, the easier the task of composing its difficulties with operatives.

In the main the Disputes Act has been wisely administered as a measure of conciliation rather than as one of compulsory arbitration. Extreme procedure, such as the punishment of strike-starters or the issuance of injunctions to forestall strikes, has been carefully avoided; and pains have been taken to place on negotiating boards tactful, judicious, well-informed men respected by the opposing parties. Hence American rubber industrialists and other employers, workmen, legislators, and governmental officials generally seeking to enhance harmonious industrial relations might derive much benefit from a study of Canada's experience in settling labor and capital contentions through a peace with honor.

* * *

Another Worry for Technologists

RECENT sub-atomic researches concerning sulphur indicate that the ultimate particle has a polar axis, evidently due to asymmetries, and that it is piezoelectric and pyroelectric, or capable of developing electricity under both pressure and heat. Perhaps fuller knowledge of these odd properties may help to explain sulphur's unique reaction with the rubber hydrocarbon under heat and pressure. Possibly it may not only provide the long-sought key to vulcanization, but even suggest a process to unscramble the scrambled and to yield at least 100 per cent desulphured rubber. It may be only a short time before some laboratory wizard will turn the trick by putting some "reverse English" on that spinning sulphur particle

* * *

Group Insurance for Employes

A FACTOR tending to considerably reduce labor turnover, as well as to promote thrift, contentment, and efficiency, and one which is worthy of more consideration by rubber manufacturers, is group insurance for employes. From practically nothing fifteen years ago the total now reaches $5,500,000,000, fully 1,500,000 operatives being thus covered in the past two years, and average insurance being increased from $500 to $1,200, at a cost of from $10.50 to $12 yearly. In some plants the policies average as high as $2,000. Employers generally pay the premiums, although there is a tendency toward sharing the cost with beneficiaries. In many cases group insurance is combined with pension and other welfare plans.

* * *

Filipinos Make Haste Slowly

AMERICAN consular observers note a watchful waiting attitude on the part of Philippine farmers concerning rubber raising. They are following with close interest various small scale operations started during the past year with the active encouragement of the insular government; and it is predicted that as soon as these plantations begin to bear, not only will the planters add much to their original holdings, but others will probably enter the field in large numbers. That the local authorities are realizing the importance of rubber cultivation is evidenced by the establishing of several experimental stations, and by the sending of an agent to study methods in the British and Dutch planting areas; and not only has the agricultural bureau issued a special textbook on rubber for farmers but it has also distributed about 100,000 Hevea seeds to some 200 applicants at a nominal price. There are now but 16 plantations, all small, yielding about 200 tons, and much of this is sent to Singapore.

* * *

PNEUMATIC TIRES IMPORTED INTO GREAT BRITAIN January, 1928, were but one-sixth of those imported in January, 1927, as the result of the new tariff intended to protect British rubber manufacturers. Yet some Britons contend they were just as well off under free trade.

Lead Compounds and Magnesia

Continuation of Mineral Accelerators

Magnesia and Lime[1]

Webster Norris

Typical Mixings Accelerated with Calcined Magnesia

Recommended by General Magnesite & Magnesia Co.

CHEAP INNER TUBE

Smoked sheets	60.
White factice	33.
Calcined magnesia	**2.**
Sulphur	5.
	100.

Open steam cure 150 minutes at 300° F.

RUBBERIZED FABRICS

First latex crepe	30.0
Smoked sheet	15.0
Pontianak	22.0
Magnesium carbonate	12.0
Zinc oxide	15.0
Sulphur	4.5
Calcined magnesia	**1.5**
	100.0

Cure 90 minutes at 275° F.

MOLDED HARD RUBBER

First latex crepe	27.25
Coarse Para	10.50
Caucho ball	3.40
Sulphur	16.00
Calcined magnesia	**1.00**
Hard rubber dust	16.00
Cotton seed oil	3.50
Magnesium carbonate	5.35
Barytes	17.00
	100.00

Cure 60 minutes at 320° F.

RUBBER STAMPS

First latex crepe	21.40
Smoked sheets	21.40
Sulphur	12.85
Zinc oxide	30.00
Litharge	8.60
Calcined magnesia	**5.75**
	100.00

Cure 10 minutes at 307° F.

INNER TUBE

First latex crepe	34.25
Smoked sheets	42.75
Sulphur	6.85
Zinc oxide	12.75
Calcined magnesia	**1.70**
M. R.	1.70
	100.00

Cure 60 minutes at 285° F.

EXTRA light calcined magnesia is a white powder which is very bulky and in a very fine state of subdivision. It has a specific gravity of 3.45. The magnesia content exceeds 94 per cent. It is moisture-free and shows about 4 per cent loss on ignition. Iron, alumina and silica do not exceed 1 per cent, and lime is not over 2 per cent. It is basic and will absorb moisture and carbon dioxide from the air, consequently care must be taken in storing it. The volume of extra light calcined is to the volume of heavy calcined as 6 to 1. This should be taken into consideration when the cost of the material is considered.

The grade of commercial calcined magnesia desirable for rubber compounding is indicated by the following specification of analysis and allowable inpurities.

	Percentages Min.	Max.
Magnesium oxide	85.0	....
Silica	....	1.5
Iron oxide and alumina	....	0.5
Lime	....	1.0
Manganese	....	none
Ignition loss	....	7.0

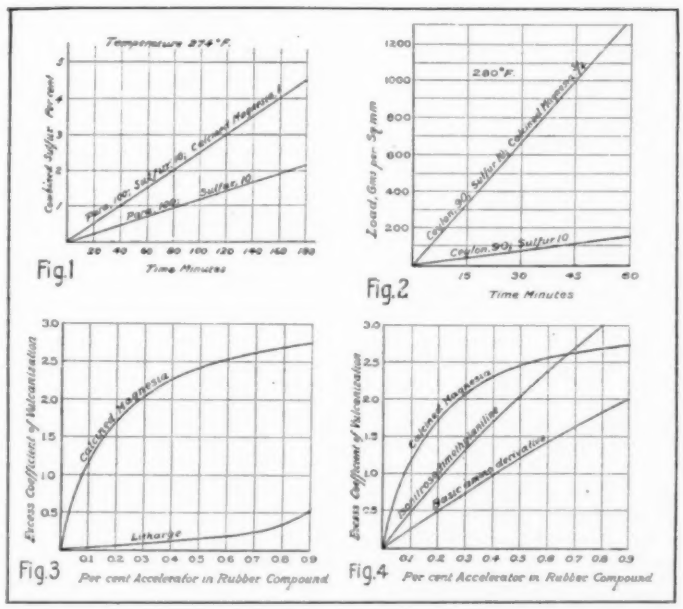


Fig. 1—Chemical effect of sulphur and magnesia. Fig. 2—Physical effect of sulphur and magnesia. Fig. 3—Accelerating effect of litharge and magnesia. Fig. 4—Accelerating effect of magnesia and certain organic accelerators.

In particle size the material should average not more than 3.0 microns[2] and the diameter of the largest particles should not exceed 10.0 microns. Color should be pure white.

The use of calcined magnesia as an accelerator of vulcanization has largely decreased in current practice. When it is used the amount depends largely upon the materials present and the kinds of rubber. In compounds containing resinous rubbers and softeners such as oils, paraffin, wax, pitches, etc., considerable can be used but the maximum should not exceed 2.5 per cent on the rubber present. The aging of the stock will be influenced by its cure. The extra light calcined magnesia is more effective, weight for weight than the heavy calcined. About 5 per cent of the former is equivalent to 7 per cent of the latter owing to its finer particle size. The same applies in a lesser degree to the medium and light as compared with the heavy calcined.

Calcined magnesia has no accelerating effect on goods vulcanized in heated air, whether cured with or without pressure but it exerts a very marked accelerating effect in the case of

[1] Copyright, 1928, by Webster Norris. Continued from INDIA RUBBER WORLD, August 1, 1928, pp. 55-56.

[2] A micron equals one-thousandth of a millimeter represented by the symbol μ. It is equivalent to 1/25,000 of an inch.

articles vulcanized in molds under pressure or in live steam.

Concerning the accelerating function of magnesia in the vulcanization the following opinion has been expressed by Kratz and Flower[5]:

"The effect of small amounts of magnesia in accelerating the vulcanization of rubber is of a secondary or contributory, rather than a primary nature, and consists largely in effecting a response from the natural accelerator in the rubber."

The accelerating effect of double calcined heavy magnesia is shown in Fig. 1 (Stevens). Using the same fine para and mixing both samples with 10 per cent sulphur, but adding also 1 per cent double calcined heavy magnesia to one sample, that with the magnesia gave an increase of 2.37 per cent of combined sulphur when each one was heated to the same temperature and for the same length of time. In other words the addition of one per cent of double calcined heavy magnesia strongly accelerated vulcanization of the mix.

Physical Effect

The physical effect of double calcined heavy magnesia is shown by Fig. 2 (Stevens). Pale plantation rubber was mixed in the following proportions: rubber 90, sulphur 10. To one part of this was added 0.75 per cent of double calcined heavy magnesia. The samples were then vulcanized at 280 degrees F. for one hour. The enormous increase in tensile strength, for a given curing time, caused by using a small percentage of magnesia is clearly evident from the curves.

Litharge and Double Calcined Heavy Magnesia Compared

The effect of these two substances on the vulcanization is shown in Fig. 3 (Stevens). The samples consisted of Ceylon pale crepe 90, sulphur 10, and the two substances to be tested were added in increasing proportions. The samples were vulcanized at 280 degrees F. for one hour. Concerning the results shown in Fig. 3 Stevens says: "The effect of litharge is to withdraw the sulphur which would otherwise be available for vulcanizing the rubber. Litharge therefore acts in a twofold capacity. Firstly, as an accelerator; and secondly, by reducing the proportion of sulphur available for vulcanization, it has a retarding action on the rate of vulcanization of the compound." He further states in the same reference, "Of the inorganic accelerators, magnesia is much more powerful than litharge, particularly in small amounts."

Comparison of Organic and Inorganic Accelerators

The compound used was

	Per Cent
Pale plantation rubber	90.0
Sulphur	10.0
Accelerating substance	0.9

Vulcanized at 280 degrees F. for one hour

The results are shown in Fig. 4, which shows the physical and chemical properties produced by isonitroso-dimethylaniline, a basic amino compound, and double calcined heavy magnesia.

From Fig. 4 it can be seen that double calcined heavy magnesia is more powerful than the basic amino derivative in all proportions up to at least one per cent of the accelerator on the weight of the rubber. It is also more powerful than isonitroso-dimethylaniline in proportion up to about 0.6 per cent. The graphs for the organic accelerators are almost straight lines, in contrast to the strongly curved graph for double calcined heavy magnesia. Therefore the effect of increasing the proportiou of the organic accelerators is similar in both cases, but different from that of the magnesia, which is also different from that of litharge.

[5] "The Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber"—II. By G. D. Kratz and A. H. Flower, INDIA RUBBER WORLD, November 1, 1920, pp. 95, 96.
[6] *J. Soc. Chem. Indus.*, 37 p. 156 T.
[7] G. D. Kratz and A. H. Flower, "The Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber—II." Paper read before the Rubber Division of the American Chemical Society at St. Louis, Mo., April 12-16, 1920. INDIA RUBBER WORLD, Nov. 1, 1920, pp. 95-96.
[8] INDIA RUBBER WORLD, Dec. 1, 1919, p. 137.

In reference to the above the following remarks are quoted from Kratz and Flower[5]:

"In view of the well-known action of many synthetic organic accelerators in the presence of certain mineral oxides, such as that obtained by Cranor[6] with zinc oxide, we are led to the conclusion that the effect of small amounts of magnesia in accelerating the vulcanization of rubber is of a secondary or contributory, rather than a primary nature, and consists largely in effecting a response from the natural accelerator in the rubber. This finds further confirmation in the observation of Stevens in his previous paper, wherein he pointed out that the accelerating effect of extra-light magnesia decreases when a sulphur coefficient of 2.0 to 2.5 has been attained. At this point, increased amounts of magnesia would have no effect as they would be in excess of the amount required by the natural accelerator, which is present in the same definite and limited amount in all of the mixtures."

Hydrated Lime

Hydrated lime for rubber makers' use is prepared from quick lime or calcined lime stone, by hydrating it. In other words, by air slacking it. In this form it is ground and bolted to the necessary fineness for rubber work. Hydrated lime produced from oyster shells and prepared in the same way has sometimes been used. It is free from all silicious matter but has no different effect in accelerating vulcanization than the rock lime.

The following analytical requirements are actual for rubber makers' hydrated lime.

	Percentages Min.	Max.
Calcium hydroxide $Ca(OH)_2$	75	....
Magnesium oxide (MgO)	....	15.0
Iron oxide (Fe_2O_3) and alumina (A_2O_3)	....	0.5
Silica (SiO_2)	....	0.5
Manganese	....	none
Ignition loss	18.0	22.0

Diameter of largest particles not over 10 microns. Mean diameter of the particles not over 3.6 microns.

In a rubber mixing, lime exerts about the same accelerating effect as litharge does. It is always used in conjunction with litharge. Incidentally by combining with any moisture present, lime functions to prevent blowing of the goods. However, it does this chiefly by reason of its basic nature which allows absorption of the hydrogen sulphide gas liberated during vulcanization. In hard rubber lime is employed to activate an organic accelerator. It is used very commonly in cheap mechanical rubber goods stock but no longer in tire compounds, having been displaced by organic accelerators that give better quality, curing range and aging property.

The accelerating and aging effects of lime are especially pronounced in open steam cure where its proportion should not exceed two per cent on the weight of the crude rubber present. In press work the proportion of lime may be high, as in the case of the tile cement mixing given among the typical stocks in the present article. Care must always be exercised not to overcure limed stocks, otherwise rapid deterioration by poor aging is certain to result. The specific gravity of lime is 2.28.

Increase in Motor Ratio

Three years ago, according to *Commerce Reports*, it was estimated that the world ratio of people to automobiles, as of Jan. 1, 1926, was 71 to 1; a year later, the gap had narrowed to 66 to 1; and at the beginning of 1928, with an estimated world population of 1,900,000,000 and about 29,700,000 automobiles, the new ratio became 64 persons to each automobile.

OF THE 29,687,499 AUTOMOBILES REPORTED TO HAVE BEEN IN service throughout the world on Jan. 1, 1928, it is estimated that 26,597,186, or 89.6 per cent, were made in the U. S.

What the Rubber Chemists Are Doing

Effect of Carbon Black on Compounds[1]

D. J. Beaver and T. P. Keller

Combustion Utilities Corp.

In an exhaustive study of carbon blacks from various sources, Neal and Perrott[2] found that the ultimate composition of these blacks was approximately the same except for the oxygen content. The data presented by these authors show that the per cent oxygen combined with or adsorbed on the black varies inversely with the calorific value within an average deviation of ± 100 B. t. u., or 0.7 per cent.

Table 1 gives a summary of certain physical properties of different types of carbon blacks which were used in the present tests. The ink black is a standard product made by the incomplete combustion of natural gas in the channel or disk process; the M black is a standard channel black for use in rubber; the B black is made by a slightly modified channel process; the D and G carbons are made by the combustion of natural gas in special types of apparatus; while the lamp black, acetylene black, and thermatomic black are standard commercial products manufactured, respectively, by the incomplete combustion of oil residues or acetylene and by the cracking of natural gas. These data show that the oxygen content of the different types of blacks varies between 1.2 and 10.7 per cent. These values were obtained from the heating value of the blacks by comparison with the straight line obtained by plotting B. t. u. vs. oxygen content (from Neal and Perrott's data).

It will be seen that the per cent oxygen shows no relationship to the iodine adsorption, the oil adsorption, the acetone extract, or the specific gravity. The only property which varies regularly with oxygen content is the ease of oxidation. This determination was made by heating an acidified 0.02 *M* solution of potassium permanganate to 70 degrees C. with 1 gr. of black for 15 minutes and titrating the excess permanganate with sodium oxalate. It is probable that part of the oxygen is combined with carbon to form partially oxidized compounds and these compounds are more easily oxidized than pure carbon itself. The data given in this table bear out this conclusion in a qualitative manner. Another interesting fact brought out is the difference in the ratio of iodine adsorbed to the linseed oil adsorbed. For example, this ratio is 0.07 for lamp black and 0.54 for ink black. This eightfold difference emphasizes in a very striking manner the specificity of adsorption phenomena.

TABLE 1—PHYSICAL PROPERTIES OF CARBON BLACKS STUDIED

Black	Iodine Adsorption Mg./g.	Oil Adsorption Cc./100 g.	Calorific Value B.t.u.	Acetone Extract %	Oxidized by 0.02M $KMnO_4$ %	Oxygen %	Sp. Gr.
Ink	79.1	146	12,810	0.36	70.6	10.7	1.88
B	8.0	150	13,480	0.30	....	7.1	1.76
M	57.4	140	13,825	0.30	43.5	5.3	1.73
Lamp black	9.2	130	13,820	0.84	28.5	5.3	1.73
Acetylene	42.7	325	14,310	0.36	26.8	2.6	1.84
D	3.1	100	14,540	0.3	....	1.3	1.82
G	22.2	100	14,550	0.5	9.9	1.2	1.82
Thermatomic	6.1	46	14,550	0.5	7.7	1.2	1.84

Properties of Rubber Compounded with Various Blacks

Since it was found that the various physical properties of the different types of blacks do not vary in the same manner, it was decided to determine if possible what property or properties could be used as a criterion to judge the suitability of a certain black for use in rubber. In the first series of tests the following compound was used: 100 parts pale crepe, 5 zinc oxide, 3 sulphur, 1 stearic acid, 25 of black, and varying amounts of grasselerator 808, to give as near as possible the same time of cure. All samples were cured in a paraffin bath regulated at 140 degrees ± 0.50 degrees C. and tested in accordance with the recommendations of the Physical Testing Committee of the Rubber Division of the American Chemical Society except for the constant temperature and humidity control of testing room.

It was found that the ink black required 2 per cent of accelerator, the M black and lamp black 1.5 per cent, and G black, thermatomic and acetylene blacks 0.5 per cent. The data for modulus at 500 per cent elongation, tensile at break before and after aging 4 days in a hot-air oven at 70 degrees C. are given in Table 2.

TABLE 2—EFFECT OF BLACKS ON PROPERTIES OF RUBBER COMPOUNDS CONTAINING THEM

Black	Modulus at 500% Elongation, Minutes' Cure, 40	50	60	Tensile at Break, Minutes' Cure, 40	50	60	Effect of Aging 4 Days at 70° C., % of original tensile (50-min. cure)	% of original abrasion (40-min. cure)
	Kg. per sq. cm.			Kg. per sq. cm.				
Ink	118	140	193*a*	185	211	240*a*	41*a*	68*a*
M	197	205	201	310	303	284	57	70
G	181	183	187	254	243	241	72	76
Lamp Black	183	185	192	233	222	218	66	78
Acetylene	184	185	188	250	233	235	92	90
Thermatomic	177	184	180	220	206	196	100	92

a 80-minute cures.

All the blacks except the ink making black reach their maximum physical properties in 50 minutes while this black required 80 minutes to reach its maximum properties. It is evident, therefore, that the presence of large amounts of oxygen on the carbon retards the rate of vulcanization of the rubber. The acetylene black is the only one that is at all out of line, since according to its oxygen content it should give a slower curing compound than either G black or thermatomic, while it is found to give exactly the same curing time. The aging data show that as more oxygen is carried into the rubber compound with the black the stock ages much more rapidly. Again this relationship holds true for all the blacks except acetylene, which gives better aging stocks than blacks containing less oxygen. This difference might be due to the presence of intermediate decomposition products, although the acetone extract is only 0.36 per cent.

In order to test this point, the acetylene black was extracted with acetone and this extract was added to an equal weight of M black. These two treated blacks were milled in rubber and aging tests were made on these stocks. It was found that this treatment had not improved the aging characteristics of the M black nor decreased those of the acetylene black. At present no satisfactory explanation for the superior aging of acetylene stocks can be offered.

Effect of Oxygen Content of Black

In order to determine more precisely the effect of the amount of oxygen in the black on the physical properties of the rubber compound, a series of mixtures of ink and M black was made using the following formula: 100 parts pale crepe, 5 zinc oxide, 4 sulphur, 1 stearic acid, 25 black, 0.75 diphenylguanidine. The data are given in Table 3 and show that the tensiles at break of the 140-minute cure of these stocks fall on a straight line. Since the amount of oxygen carried into the rubber mixes by the blacks varies in a continuous manner, it is evident that the physical properties as measured by the tensile at break vary inversely as the per cent oxygen on the blacks. Plotting the modulus at 500

[1] "Effect of Various Types of Carbon Black on Certain Physical Properties of Rubber Compounds." Presented before the Division of Rubber Chemistry at the 75th Meeting of the Am. Chem. Soc., St. Louis, Mo., April 16 to 19, 1928. Condensed from *Indus. Engr. Chem.*, Aug., 1928, pp. 817-819.

[2] Bur. Mines, *Bulletin* 192 (1922).

per cent elongation brings out this same relationship, showing that the rate of vulcanization is also proportional to the amount of oxygen on the black. The aging data on this series of compounds are not given, since the stocks containing high percentages of the ink black are so undercured that they show no indication of the actual aging characteristics of the black.

TABLE 3—RELATION BETWEEN OXYGEN CONTENT OF MIXTURES OF INK BLACK AND M BLACK ON PROPERTIES OF RUBBER COMPOUNDS

(140-minute cure at 140° C.)

Black		Modulus at 500% Elongation	Tensile at Break	Oxygen on Black
Ink %	M %	Kg. per sq. cm.	Kg. per sq. cm.	%
100	0	50	94	10.7
75	25	77.5	115	9.4
50	50	114	158	8.0
25	75	148	184	6.6
0	100	169	207	5.2

Another possible explanation of the data presented here is that the differences in the tensile or modulus figures are due to the difference in the reenforcing properties of the black and not to the retarding effect of the oxygen on the rate of cure. However, the data in Table 2 show that with sufficient accelerator present the ink black will give a stock with as high a modulus and tensile as that of the M black. That the adsorptive characteristics of the blacks are not responsible for the differences in the rate of cure can be seen from Table 1. For example, lamp black adsorbs only 21.5 per cent as much iodine and 40 per cent as much linseed oil as acetylene black, but requires about three times as much accelerator to give the same rate of cure. On the other hand, the ink black adsorbs 38 per cent more iodine than the M black and requires somewhat more than 33 per cent accelerator to give it the same time of cure. However, its oil adsorption is only 4 per cent greater than the M black. It seems reasonable to conclude that adsorption of iodine or linseed oil does not indicate the curing characteristics of the black. Therefore, it can be concluded that the differences noted above are due to the presence of the oxygen in the black.

Further confirmation of this conclusion is given in Table 4. These data were obtained with the same test formula used for the ink black-M black mixtures, and show that the properties of compounds containing mixtures of G and M blacks also vary in a continuous manner. Since the difference in the amount of oxygen on these two blacks is not so large as it was with the previous mixtures, the slope of the modulus curve is smaller. Another interesting point brought out in this test was the effect of the increased amount of oxygen on the rate of deterioration of the stock. It was found that the higher the amount of oxygen carried in the stock by the black the more rapid the deterioration, although this deterioration was only approximately a direct function of the amount of oxygen present.

TABLE 4—RELATION BETWEEN OXYGEN CONTENT OF MIXTURES OF G AND M BLACKS ON PROPERTIES OF RUBBER COMPOUNDS

(100-minute cure at 140° C.)

Black		Modulus at 500% Elongation	Tensile at Break	Oxygen on Black	% of Original Tensile, Aged 4 Days at 70° C.
G %	M %	Kg. per sq. cm	Kg. per sq. cm.	%	(Best Cure)
0	100	165	298	5.2	20
25	75	183	288	4.2	25
50	50	198	269	3.2	33
75	25	222	269	2.2	59
100	0	232	248	1.2	66

Another series of tests was made using the same amount of accelerator and changing the time of vulcanization to give the maximum physical properties. The compounds used for this test contained 100 parts of pale crepe, 5 zinc oxide, 4 sulphur, 1 stearic acid, 25 of black, and 0.75 diphenylguanidine.

TABLE 5—EFFECT OF VARIOUS BLACKS ON TIME OF CURE

Black	Time of Cure at 140° C. Minutes	Modulus at 500% Elongation Kg. per sq. cm.	Tensile at Break Kg. per sq. cm.	% of Original Tensile, Aged 6 Days at 70° C.
B	160	169	288	9
M	160	191	304	10
G	100	220	274	26
D	100	223	273	26
Acetylene	80	219	250	45
Lamp black	140	113	201	8
Thermatomic	120	113	225	35

These results (Table 5) again show the very great difference in the rate of vulcanization of compounds containing the same amount of black but different amounts of oxygen and also show the difference in the maximum physical properties produced under these conditions. It will be seen that the data agree very well with those presented previously. The figures for the ink black are omitted, since it was too much under-cured to give satisfactory results. The more rapid deterioration of these stocks compared with those shown in Table 2 is due to the fact that diphenylguanidine does not have so great an anti-oxidant action as grasselerator 808.

Conclusion

The data presented herein show that in general the presence of oxygen on carbon black retards the rate of vulcanization in direct proportion to the amount of oxygen present and also decreases the maximum physical properties obtainable with a given amount of accelerator. The aging data show that the presence of this oxygen on the black increases the rate of aging as the amount of oxygen increases, but not in direct proportion to the per cent of this oxygen present. It can be concluded, therefore, that compounds which contain a small amount of oxygen, such as thermatomic, G black, or acetylene black, will give better aging stocks than compounds containing higher amounts of oxygen such as lamp black and standard channel blacks. No correlation could be found between the acetone extract, iodine adsorption, or oil adsorption, and the effect of these blacks on the rate of cure or aging.

Hemoglobin a Compounding Ingredient

Blood has not hitherto been regarded as a resource for a rubber compounding ingredient. However, it is important and interesting to know that hemoglobin, the red coloring matter of blood, has proved to be a compounding ingredient of remarkable effect in certain lines of rubber work, notably for extremely tenacious adhesion of rubber to metal.

Hemoglobin freed from all extraneous blood products has value in rubber work in three different ways, namely: (1) As a generally effective protective colloid serving as an anti-coagulant for latex; (2) it becomes a molecularly dispersed filler adhering both to inert fillers such as abrasive grains, fibers, metal, etc.; (3) under vulcanizing conditions the soluble proteid is transformed into an insoluble filler.

The use of hemoglobin for the stabilization of latex also has been patented[1]. In this case it is claimed that latex is stabilized by the addition of blood or of its constituents such as defibrinated blood, serum or "red end," i.e. hemoglobin. The amount added may vary from 1 to 10 per cent of the latex according to the degree of stability required. Latex so treated is not liable to coagulate as the result of agitation, addition of fillers, etc., but may be coagulated by the addition of acids.

[1] British patent No. 279,336, Dec. 14, 1927.

Physical Testing Report

The detailed report of the Physical Testing Committee of the Rubber Division of the American Chemical Society on the effect of temperature and humidity during the preparation and testing of rubber compounds will appear in the October, November and December issues of *Industrial & Engineering Chemistry*.

Acid Cure Solution

A practical formula for acid cure solution for dipped goods is as follows: 2⅛ ounces of sulphur chloride to one gallon of carbon tetrachloride stirred thoroughly. When carbon tetrachloride is not available, benzol can be used as a substitute. In that case the solution must be kept in a container that is airtight because the benzol evaporates quickly.

American Rubber Technologists

THE INDIA RUBBER WORLD'S *brief biographies of American rubber technologists are valued by our readers because they record the accomplishments of the men in charge of the research, development and control work of the rubber manufacturing industry.*

Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication.

SHELDON PERRY THACHER, chem. engr. *b.* Sept. 20, 1883, Hartford, Conn.; Hartford public schools; Sheffield Scientific Sch.; Yale U.; Mass. Inst. of Technology; 1907 M. I. T., chem. engr., no degree; chem. Peerless Rubber Co., 1908-1912; supt. W. C. Hendrie Rubber Co., 1912-1915; tire engr. Gen. Lab. U. S. Rubber Co., 1915-1918; tech. asst. to president, 1918-1922; mgr. tire div. tech. service dept., 1924-1927; second vice pres. in charge of all tire factories and tire development, U. S. Rubber Co., since 1927. *Author:* Research on design, construction, compounding of cord tires and development of tire manufacturing processes. Also patents covering all these features, devices and methods for tire testing. *Member:* S. A. E; Detroit Chamber of Commerce; past pres. and chairman of the board Tire & Rim Asso. of America, 1924-1925. *Address:* U. S. Rubber Co., Detroit, Mich.

John M. Ball, chem. engr. *b.* Jan. 18, 1895, Philadelphia, Pa.; Swarthmore High School, Swarthmore, Pa.; U. of Pittsburgh, one year; Cornell U., three years; B. Chem., Cornell, 1916; Goodyear T. & R. Co., Akron, O., 1916-1917; Combination Rubber Mfg. Co., Bloomfield, N. J., 1917-1918; U. S. Bureau of Standards, June to Dec., 1918; Manhattan Rubber Mfg. Co., Passaic, N. J., 1919-1921; salesman, R. T. Vanderbilt Co., New York, N. Y., since 1921. *Member:* Am. Chem. Soc., Cornell Club of N. Y. *Address:* R. T. Vanderbilt Co., 50 East 42nd St., New York, N. Y.

William Harold Cope, chem. *b.* July 1, 1894, Norristown, Pa.; Norristown High School; B. S., U. of Pa., 1916; Lee Tire & Rubber Co., Conshohocken, Pa., 1916-1922; salesman, R. T. Vanderbilt Co., New York City, since 1922. *Member:* Am. Chem. Soc., Masons. *Address:* R. T. Vanderbilt Co., 50 East 42nd St., New York, N. Y.

Joseph A. Faucher, engr. *b.* Nov. 12, 1896, Tacoma, Wash., B. M. E., Coll. of Engineering, U. of Detroit, 1925; tech. field service representative, U. S. Rubber Co., New York, N. Y., 1925-1928; manager airplane tire sales, since 1928; Lieut. U. S. A. Air Corps Reserve, J. A. P. rating, Transport Pilot. *Member:* S. A. E., National Aeronautic Association. *Address:* U. S. Rubber Co., Detroit, Mich.

George B. Campion, *b.* Feb. 12, 1886, Louisville, Ky., Manual Training High School; supercargo lumber steamer South America, 1907; car shops, I. R. T. Co., New York City, 1908-1912; mechanical div., Diamond Rubber Co., 1912-1915; special representative traveling western states, Alaska and South America, B. F. Goodrich Co., Akron, O., 1915-1920; dist. mgr. Dallas, Tex., 1920-1922; dist. mgr., New York City, 1922-1924; mgr. mechanical sales, Akron, O., since 1924. *Member:* Masons, Shriner. *Address:* The B. F. Goodrich Co., Akron, O.

Howard H. Cutts, chem. engr. *b.* July 2, 1904, Roxbury, Mass.; Boston High School of Commerce; B. chem. engr., Northeastern U., 1928; clerk, Samuel Cabot, Inc., Boston, Mass., 1921-1924; analy. chem., Simplex Wire & Cable Co., Cambridge, Mass., 1925-1928; genl. inspector, American Rubber Co., Cambridge, Mass., since 1928. *Author:* Thesis on "Preparation and Use of Selenium Sulphide as a Vulcanizing Agent." *Member:* Am. Chem. Soc. *Address:* Boston Y. M. C. A. Dormitory, Box 635, Boston, Mass.

R. R. Olin, chem. *b.* May 6, 1889, Akron, O.; Municipal U. of Akron, class of 1909; development and production work, B. F. Goodrich Co., 1920-1924; consulting chem. engr. to Reliance Rubber Co., Ltd., London, Eng., 1924-1925; consulting chem. to Faultless Rubber Co. and Swinehart Tire & Rubber Co., 1925-1926; owner, R. R. Olin Laboratories since 1927. *Address:* P. O. Box 72, Akron, O.

Sherman Israel Strickhouser, chem. *b.* Oct. 25, 1901, York, Pa.; York public schools; B. S., indus. chem., Pa. State Coll., 1922; M. S., 1923, and Ph.D., 1926, U. of Ill.; chem. Ill. State Water Survey, 1923-1926; research chem., genl. labs., U. S. Rubber Co., since 1926. *Author:* "Some Observations on Sewage Tank Gases," with A. M. Buswell; Ph.D. thesis, "The Relation of the Depth of a Sprinkling Sewer Filter to the Degree of Purification." *Member:* Phi Kappa Tau; Alpha Chi Sigma; Sigma Xi; Phi Lambda Upsilon; Sigma Tau; Phi Kappa Phi. *Address:* 318 Lafayette Ave., Passaic, N. J.

John Loy Blakely, chem. *b.* Aug. 3, 1901, Kilbourne, Ill., B. S., U. of Ill., 1922; student for M. A. degree, evening school Columbia U.; teacher, Florida High School, 1922-1926; chf. chem. Thomas A. Edison Industries, chemical works, Orange, N. J., 1926-1927; genl. labs. U. S. Rubber Co., since 1927. *Member:* Kappa Delta Rho. *Address:* 543 West 146th St., New York, N. Y.

Victor L. Burger, chem. *b.* 1901, Springfield, L. I., N. Y., B. S., Brooklyn Polytec. Inst., 1926; lab. asst. F. J. Maywald, New York City, 1917; lab. asst. Vulcan Proofing Co., Brooklyn, N. Y., 1918; in charge of analytical lab., genl. labs., U. S. Rubber Co., Passaic, N. J., since 1918. *Address:* 91 Lakeview Ave., Scarsdale, N. Y.

Joseph Francis Connolly, chem. *b.* Feb. 28, 1901, New York, N. Y., B. S. in chem., Cooper Union, 1927; genl. labs. U. S. Rubber Co., Passaic, N. J., since 1919. *Member:* Omega Delta Phi. *Address:* Y. M. C. A., Passaic, N. J.

John Wilfred Temple, chem. *b.* Oct. 17, 1897, Templeville, Md., B. S. Lafayette Coll., 1921; Ph.D., Columbia U., 1928; junior chem. C. W. S., Edgewood Arsenal, 1921-1923; genl. labs. U. S. Rubber Co., Passaic, N. J., 1923-1924, June to Sept. 1295 and since 1928. *Author:* Thesis Columbia 1928, "An Electrometric Method for the Study of Autoxidation Reactions." *Member:* Phi Beta Kappa, Tau Beta Phi, Phi Lambda Upsilon, Sigma Xi, Am. Chem. Soc. *Address:* Y. M. C. A., Passaic, N. J.

Herbert A. Lehman, chem. *b.* Jan. 9, 1901, New York, N. Y., M. A. Columbia U., 1924; research chem., genl. labs., U. S. Rubber Co., Passaic, N. J., 1928. *Address:* 521 Seventh Ave., Long Island City, N. Y.

Burton Judson Lemon, chem. *b.* Bethel, Sullivan County, N. Y., Monticello High School, Cornell U., A. B., 1908, Ph.D. chem., 1913; instructor analytical chemistry, Cornell U., 1909-1915; U. S. Rubber Co., since 1915; genl. labs., New York City, 1915-1917; technical service dept., New York City, 1919-1923; research dept., Detroit, 1924-1926; field engr. tire div., Detroit, since 1927. *Author:* Notebooks on Qualitative and Quantitative Chemical Analysis. Several papers on tires. *Member:* Asso. Automotive Engrs., Chairman Detroit Section 1928-1929; Director Tire & Rim Asso. of America, Inc., Sigma Xi, Cornell clubs of New York and Michigan, A. A. A. S., Gamma Alpha Graduate Scientific Society. *Address:* 6600 East Jefferson Ave., Detroit, Mich.

John Parks Coe, chem. engr. *b.* Dec. 15, 1889, Rock Falls, Ill., U. of Kan., A. B., Washburn Coll., 1911; B. S., M. I. T., 1914; factory student, G. & J. Tire Co., Indianapolis, Ind., 1913-1914; process and compound development, genl. labs., U. S. Rubber Co., Passaic, N. J., 1914-1927; in charge of product development, U. S. Rubber Co., tire div., Detroit, Mich. *Address:* U. S. Rubber Co., Detroit, Mich.

Robert Walker Eldridge, chem. *b.* 1903, Moscow, Idaho; Moscow High School; B. S., U. of Idaho, 1923; Ph.D., Yale U., 1927; lab. asst. chem. dept., Yale U., 1923-1925; research chem. genl. labs., U. S. Rubber Co., since 1926. *Author:* Ph.D. thesis, "Some New Derivatives of Atophan." *Member:* Beta Theta Pi; Alpha Chi Sigma; Sigma Xi; Am. Chem. Soc. *Address:* U. S. Rubber Co., Genl. Lab., 2nd and South Sts., Passaic, N. J.

New Machines and Appliances

Steel Platen Press

THE improved hydraulic equipment here pictured comprises a steel platen press and auxiliary hydraulically operated table

Vulcanizing Press and Mold Elevator

arranged for conveniently loading and discharging heavy molds from the press.

The press itself stands on a cylindrical base of liberal proportions. The cylinder has an outside packed gland and babbitt lined column guides. The 5-platen, 4-opening press illustrated has 24 by 24-inch steel platens opening 4 inches. The space requirements of the 5 plates is much less than for an equal number of cast iron plates.

For vulcanizing purposes this press has a hydraulic elevator table located to serve the press for the movement of molds into and out of the press. This piece of accessory equipment lightens the labor of the operator by greatly facilitating handling the molds and adding much to the general efficiency of production. Lake Erie Engineering Corp., 270 Perry St., Buffalo, N. Y.

Automatic Inner Tube Press With Electric Timer

MASS production of inner tubes followed inevitably and closely that of pneumatic tires. One of the methods to meet the demand for tubes was the development of presses for rapidly molding inflated and endless tubes with valve attached. Among the several presses designed for this purpose the latest is the automatic press here pictured. It is opened by compressed air, steam curing being regulated by an electrical timer.

The machine is mounted at convenient working height with the bottom half stationary to receive one mold half, the other half being carried in the hinged top part of the press. The mold itself is split circumferentially at 40 degrees for convenience of working. The opening and closing movement is affected by a system of levers operating from an air cylinder hinged at the rear of the press base.

The feature of the leverage system is a locking device worked by an eccentric controlled in such manner as to insure absolute safety to the operator. In fact the press cannot be closed until he pushes with one hand a lever to release the grip of a safety hook while with his other hand he moves the closing lever that controls the action of the air cylinder. The locking eccentric mentioned is centrally located on the top half of the press and actuates a heavy locking hook which draws and holds together the mold halves under tremendous pressure just as they reach their closed position.

The timing mechanism attached beneath the press is electrically driven by a small motor through a worm reduction gear.

National Tube Press

This drives a crank giving continual reciprocating motion to a pivoted arm. The latter drops into a pocket when the point of release is reached by reason of the revolution of a ratchet wheel in the timer. Dropping of the pivoted arm moves one lever of the timing mechanism and operates an air cock inflating or deflating the tube in the mold. The pivoted arm also moves a second lever of the timer after the set time expires and serves then to actuate the air valve and open the mold.

The timer may be set for curing intervals from 2 to 20 minutes. Setting a cure is done by moving a freely revolving graduated dial for the desired time interval, then clamping the dial at that setting by thumb screws; six graduations on the dial correspond to one minute interval.

After completion of the cure the pawls of the ratchet in the timer are automatically disengaged, the wheel then rotates to the starting point by the action of an attached suspended weight, ready for the next cure.

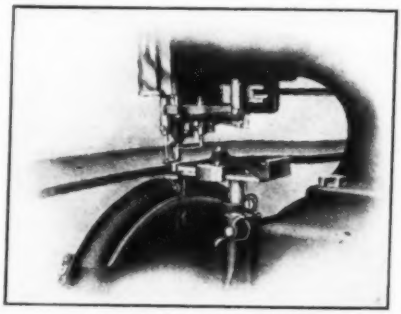
This press is built in standard size, accommodating interchangeably all the standard tire size tube molds, while the giant press receives those of larger size for bus and truck tires. The molds supplied for use in these presses are of very close grain iron, chromium plated and buffed to a high polish. Incidentally, the equipment of the press includes an air gun for tube inflating fitted with two slides on a swivel. It is thus adjustable to take any size of bent or straight stem valve.

The advantages of these presses include many practical points. They are positively safe and one man can operate 16 presses, curing all of the goods with exactness under control of the reliable timing device. National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

Lock Stitch Machine

THE frequent need of reinforcing points and plies of material in rubber belting, packing and material that is to be strongly connected in long lengths is met by sewing or stitching. While the usual sewing machine with lock stitch is often used for this purpose the machine here pictured has special adaptability for such work because of the special locked stitch work it performs.

The machine is termed an awl fed machine. An awl arranged in the head of the machine punches a hole through the goods as it descends, after which it feeds the work forward. The awl then returns followed by the needle. The advantages of having the awl do the feeding are manifold. One of the greatest gains lies in the fact that the awl is short and stiff and will not spring, but feeds uniformly so that each stitch is made the same length. The machine here referred to is made for



Campbell Lock Stitcher

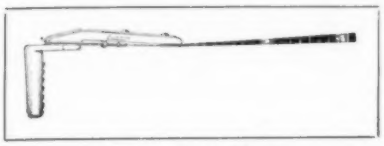
either hand or power operation. Campbell Bosworth Machinery Co., 577 Washington St., Boston, Mass.

THE W. F. GAMMETER CO., CADIZ, O., has announced lower prices on universal steel calender shells due to the installation of specially built shell equipment.

One Man Tape Hook

THE universally used steel measuring tape is in the hands of every rubber plant engineer and millwright. Its convenient use is greatly enhanced by the addition of a new and simple device in the form of a hook which enables one man to take long and short measurements accurately.

The hook as here pictured is easily slipped on and off the tape yet can not fall off. It has a toothed edge and takes a firm and square grip on the metal or other material as soon as tension is applied to the line and releases itself when tension is released. It swings with the ring of the tape, thus guarding against breakage of the line and allowing the hook to fold against the case when the line is wound in.

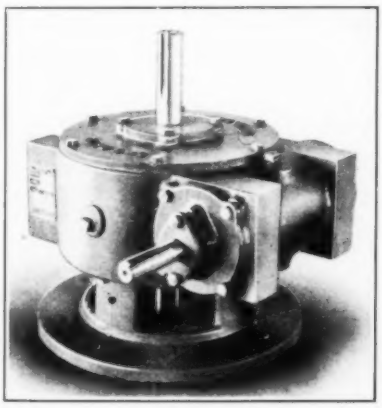


Lufkin Tape Hook

The hook is made of light weight composition metal, is two inches long and suitable for standard steel tapes ⅜-inch wide. The Lufkin Rule Co., Saginaw, Mich.

Gear Reduction Unit

A NEW vertical speed reducer that might be applied to rubber churns or any other machine driven by a vertical shaft for agitation is represented in the illustration. It is compact in design and has tapered roller bearings throughout. The unit may be fastened conveniently to the top of a machine, to a wall, or to a floor. It is so designed that the driven shaft can project above or below or both. The construction is oil tight. The worm

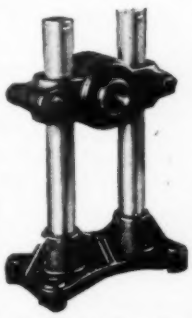


Vertical Speed Reducer

gears are of phosphor bronze and the worms of hardened steel with the threads ground and polished. The units are available in ratios from 9¾ to 1 to 50 to 1. The Boston Gear Works Sales Co., Norfolk Downs (Quincy), Mass.

Adjustable Bearing

A MACHINE accessory of much interest is here pictured. It is a standardized adjustable outboard bearing readily adaptable to numerous uses. Among them may be mentioned, outboard support for projecting shafts, counter shaft hanger, temporary bearing requiring future adjustment, gear mount where oil tight case is not necessary, and as pillow blocks. In construction these bearings are very sturdy and are equipped with bronze bushings giving a most efficient bearing surface. They are adjustable for height and very durable. Boston Gear Works Sales Co., Norfolk Downs (Quincy), Mass.



Outboard Bearing

Time Study Stop Watch

NO rubber plant or laboratory of any sort but needs a dependable stop watch for time study of production operations and time data. A stop watch that

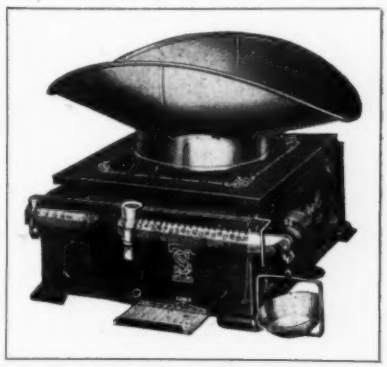
Meylan Timer

meets the approval of government testing laboratories and the Navy is here illustrated. It is a fifth second precision timer of which the following is a brief description.

A high grade plain stop watch registering ⅕ of seconds with a 30 minute register and an excellent 11 jewel precision chronograph movement. The movement runs continuously whether or not the ⅕ second hand is in motion. The small lower second dial indicates whether or not the watch is running. The advantage of this type of watch is that it operates on a gear system thereby reducing friction to a minimum; has greater accuracy and maintains it longer; reduces the shock of starting and stopping by gearing in and off smoothly. Start, stop and fly-back are effected by consecutive depressions of a pin in the crown. A. R. & J. E. Meylan, 264 W. 40th St., New York, N. Y.

Combination Counting Scale

THE illustration represents the only combination scale of its kind which will count pieces of uniform weight at a ratio of 50 to 1. In other words, for every unit placed in the small ratio scoop at the right of the scale base it requires 50 units in the quantity scoop to balance. Where weight is required in addition to count, the contents of the ratio scoop are removed and the weight determined by adjustment of the poise on the beam.



Triner Counting and Express Scale

The scale is thus well adapted for rubber factory work, particularly in the shipping room for parcels post and express weighings. It is equally useful in the compound weighing room for weighing out batch components. It is built of two capacities, one from 1 ounce to 101 pounds and the other from 1 ounce to 201 pounds. Being rugged, compact and accurate it is well suited to general factory weighing purposes. Allsteel Scale Co., Inc., 25 W. Broadway, New York, N. Y.

All Steel Truck

THE illustration pictures an all steel truck specially designed for general use on wharves, railway platforms and for general storehouse and rubber factory work.

Its frame is made from heavy steel tubing, having sufficient cross bars to prevent boxes from falling through the frame. The nose of the truck is on an angle of 90 degrees with the handles, and is 8 inches long by 16 inches wide. The wheels are all steel 6 inches in diameter and have roller bearings which make them push very easily under load.

Saginaw Pick-Up Truck

The weight of truck is 40 pounds. It

is also furnished with a screen between the handles for small packages. Saginaw Stamping & Tool Co., Saginaw, Mich.

Barrel Truck

A SIMPLE steel truck designed for moving loaded barrels is as handy in a rubber plant as the ordinary style of hand truck and much more convenient for the purpose for which it is designed. The truck here pictured is entirely of metal, compact and durable. The barrel rides on

Saginaw Barrel Truck

its platform without danger of sliding off in transit.

The old practice of using a special barrel truck has not worked out satisfactorily as in most cases only one truck is available for probably 50 or 100 barrels or more. It is hard to lift the barrels sometimes in crowded spaces. With the barrel truck, barrels can be easily moved from one place to another immediately and it is by far more flexible equipment to have each barrel independent and portable. Saginaw Stamping & Tool Co., Saginaw, Mich.

All Type Tire Gage

A TIRE gage specially adapted for the requirements of garages and service stations is represented in the illustration. It embodies several new features all of much importance. These points may be summarized: (1) the gage takes the

Schrader Service Tire Gage

place of four gages and with it may be tested any pneumatic tire, from bicycle to high pressure truck or bus tires; (2) it is calibrated from 10 to 160 pounds, registering by 5 pound graduations; (3) it is so large that it is difficult to lose, or mislay and customers will not mistake it for their own; (4) attached is a deflator for easily and quickly releasing air from over-inflated tires without damaging the valve inside; (5) it is simple, accurate, easily read and convenient to use on any type of wheel; (6) withal the gage is very sturdy and built to withstand hard usage. A. Schrader's Son, Brooklyn, N. Y.

Rubber Washer Cutter

THE machine here illustrated was designed for cutting small rubber washers such as those used in garden hose couplings, etc., formed by sectioning cured rubber tubing. Washers of this sort range in diameter from ¼ to 1½ inches and from 3/32 to ¼-inch in length. The speed of the machine on such work is from 95 to 200 cuts per minute. It is provided with three change gears for the feed rollers and one change on the ratchet.

The machine is supported on a substantial pillar support and is provided with a V-shaped holder to receive the tubing to be cut. From the holder the tubing is fed through two bushings of appropriate size between which a ten-inch diameter circular

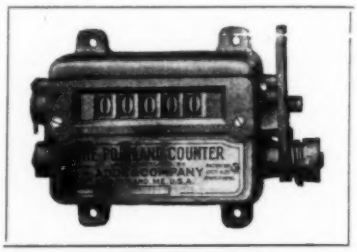
Thropp Washer Cutter

knife revolves. The knife has a speed of 1,997 r. p. m. and is supported on a rocker arm which allows it to pass in and out between the pair of bushings. A water connection is provided to facilitate the cutting. The main bearings are equipped with ball bearings, lubricated by the Alemite system. William R. Thropp Sons Co., Trenton, N. J.

Lineal Stock Meter

THERE are very many instances in rubber factory practice where a meter is desirable for recording the linear measure of stock being calendered, tubed or otherwise processed or costed. It is important that an instrument for this purpose be accurate and durable.

The machine here pictured has been successfully applied in measuring the output of lumber from wood-working machines, which is evidence of its practicability. It is essentially a counter, the measuring wheel of which rests upon and is rotated by the passing stock. Special fittings are designed to suit individual requirements, as for example measuring



Portland Meter and Counter

wheels with plain or milled iron or rubber covered face, of either 12 or 24 inch circumference and with ratchet in the hub to run in either direction.

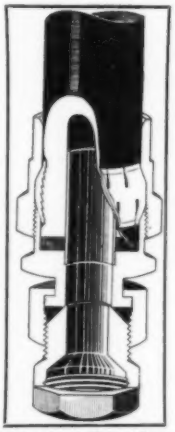
Both meters and counters are built in 3 sizes of 4, 5 and 6 figures capacities and the meters or measuring wheels may be obtained to measure in practically any unit of measure. Adde & Co., 65 Kennebec St., Portland, Me.

New Spadone Machine

The Spadone Machine Co., 15 Park Row, New York, N. Y., has now ready for the market a new machine for cleaning belt presses and the like. It has been favorably received wherever shown.

Small Steam Hose Connection

THE numerous troubles encountered in using live steam conducted in small rubber hose, have been successfully met by the use of the coupling here pictured. It will be noted by this longitudinal section of connection and attached hose how the ferrule firmly grips the outside of the hose forcing it tightly around the barbed insert, making a steam tight connection. The taper of the long insert is screwed up tightly against the nipple by the swivel nut. Carefully designed tapers eliminate the possibility of leakage. The key of this steam hose connection is the aluminum ferrule which insures permanent steam-tight attachment. Eastman Mfg. Co., Manitowoc, Wis.



Eastman Coupling

ACCORDING TO FIGURES PREPARED BY THE American Motorists' Association, 2,951,503 new passenger cars and trucks were purchased by motorists of the United States during 1927. The total number junked was only 1,825,581 so that there were 1,125,922 more cars bought than were discarded.

Editor's Book Table

Book Reviews

"Bureau of Standards Journal of Research." United States Government Printing Office, Washington, D. C. July, 1928, Vol. 1, No. 1. pp. 104. 6 by 9 inches. Illustrated.

This is the first issue of a new periodical to be published monthly, each issue averaging about 200 pages. The July number contains four articles, one of which, of special interest to tire engineers, is descriptive of two methods which have been successfully tried for observing the movement of the treads of pneumatic tires under running conditions. Subscriptions for the new journal should be placed with the Superintendent of Documents, Government Printing Office, Washington, D. C.

Rubber Bibliography

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MEASUREMENT OF TREAD AND MOVEMENT OF PNEUMATIC TIRES. W. L. Holt and C. M. Cook, *Bu. of Standards J. of Research*, July, 1928, p. 19. Illustrated.

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APPLICATION OF PAINT AND VARNISH TO RUBBER PRODUCTS. A Linz, *Trans. Inst. Rubber Indus.*, June, 1928, pp. 59-67. Discussion.

ORGANIC RUBBER COLORS. W. J. S. Naunton, *Trans. Inst. Rubber Indus*, June, 1928, pp. 68-84. Discussion.

SCHEME OF ACCELERATOR CLASSIFICATION. R. P. Dinsmore and W. W. Vogt, *Trans. Inst. Rubber Indus.*, June, 1928, pp. 85-106.

PLASTICITY AND ELASTICITY OF RUBBER. A. Van Rossem and H. Van Der Meyden. Reprint of paper read at the International Congress for Testing Materials, Amsterdam, Sept., 12-17, 1927. Published by Martinus Nijhoff, The Hague, Holland.

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MEASURING BRITTLENESS OF RUBBER AND GUTTA PERCHA COMPOUNDS. G. T. Kohlman and R. L. Peek, Jr., *Instruments*, June, 1928, pp. 275-279. Illustrated.

RELATION BETWEEN LATEX TUBE BORE AND YIELD. Herbert Ashplant, *Rubber Age*, London, August, 1928, pp. 209-211; *Bull. Rubber Growers Asso.*, July, 1928, pp. 484-490, and *India Rubber J.*, July 21, 1928, pp. 102-103.

RESISTANCE OF RUBBER TO COMPRESSION. R. Ariano. Mathematical discussion, *Il Nuovo Cimento*, March, 1928. Translation, *India Rubber J.*, August 11, 1928, pp. 207-210.

USE OF "MOAC" IN RUBBER INDUSTRY. Rudolf Ditmar, *Caout & Gutta-percha*, 25, p. 13,968 (1928).

PRUSSIAN BLUE AND OTHER FERROCYANIDES IN RUBBER. J. R. Scott, *India Rubber J.*, 75, pp. 549-50 (1928).

PUNCTURE PROOFING PNEUMATIC TIRES. Charles E. Mullin, *Textile Recorder*, 45, p. 65 (1928).

AGING OF VULCANIZED RUBBER. IV. Relation between wave length of light and the deterioration of vulcanized rubber. Takeji Yamazaki, *J. Soc., Chem. Ind. Japan*, 30, pp. 804-813 (1927).

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FINENESS AND REINFORCING POWER OF RUBBER FILLERS. W. Esch, *Gummi-Zeit.*, 1928, 42, p. 1921.

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GLYPTAL AND CUMARONE RESINS. J. H. Frydlender, *Kunststoffe*, 1928. Vol. 18, No. 7, pp. 158-160. From *Rev. Prod. Chim.*, 31, pp. 242-246 (1928).

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COVER CROPS AND GREEN MANURING. J. Mitchell, *Trop. Agri.*, 1928. Vol. 70, No. 5, pp. 325-335. Discussion.

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FACTORY PROCEDURE AND EFFICIENCY. Special reference to crepe manufacture. T. E. H. O'Brien. *Trop. Agri.*, 1928. Vol. 70, No. 5, pp. 351-361. Discussion. Appendix.

INVESTIGATIONS INTO HEVEA ANATOMY. Important advance problem of yield variability cleared up. Relation of latex tube bore to yield. *Planters' Chron.*, Vol. 23, No. 26 (1928), pp. 469-476.

New Publications

The Falk Corp., Milwaukee, Wis., has just issued Bulletin No. 190 on Falk herringbone gear speed reducers.

Rubber Mill Machinery is the name of a new catalog published by William R. Thropp & Sons Co., Trenton, N. J.

The Patterson Foundry & Machine Co., East Liverpool, O., has issued a four page catalog describing and illustrating the agitators manufactured by the company.

"Progress" is the title of a booklet issued by the Rapson Tyre & Rubber Co. (Australasia), Ltd., in commemoration of the laying of the foundation stone of the new factory at Launceston by the governor of Tasmania on Monday, March 12, 1928.

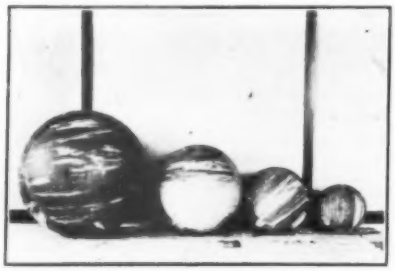
The Hood Rubber Co., Watertown, Mass., has issued a very beautiful and artistic catalog of the new galoshes put out by the company. It is profusely illustrated and devotes a page to showing how to fit the various size heels, and another page on what to buy contains a graph giving the sales percentages, very helpful in laying in stock.

The Rubber Association of America, Inc., has issued its twenty-eighth year book. It is divided into two sections, the first containing personnel of organization, constituency of permanent committees and divisions and the membership roll of the association. The second section comprises the charter, constitution and by-laws, officers and directors of the association since its organization in 1900, necrology, and "in memoriam."

New Goods and Specialties

Surf Balls

A complete line of surf, beach and rubber balls of various sizes for use in

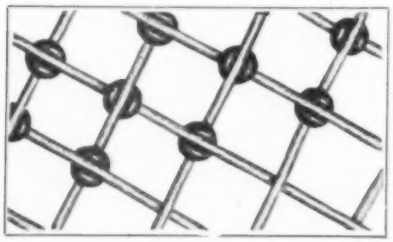


Balls of Various Sizes

athletic events is manufactured by the Rubber Patents Corp., Grand Rapids, Mich. The balls, which are the invention of Mitchel Carter of Hollywood, Calif., have been very popular on the Coast for some time, and the company plans to introduce them to other centers in the United States during the coming months. The Corduroy Tire Co., Grand Rapids, Mich., has been awarded the contract to make these balls for the Rubber Patents company.

Tennis String Protector

To keep the tennis racket in its best playing condition for the longest possible time, the Tennis Specialties Co., 52 Cali-



Smilie Protector

fornia St., San Francisco, Calif., manufactures a string protector which is said to distribute the strain from the center of the racket outwardly to include most of the side strings. The Smilie protector has small rounded rubber surfaces which come in contact with the ball and grip it the same every time. The center, where compression is greatest between the strings, is hard fabric and not cushions, so that none of the resiliency of the gut is lost. It grips the bottoms and sides of the strings at their crossing and in the center or playing area of the racket, and so distributes the strain and makes the pull of more of the strings effective. A prominent tennis champion played 103 sets, with a racket equipped with the Smilie protector, before a string broke. This, of course, is an extraordinary record as strings rarely last more than 25 or 30 sets.

Suction Soap Dish

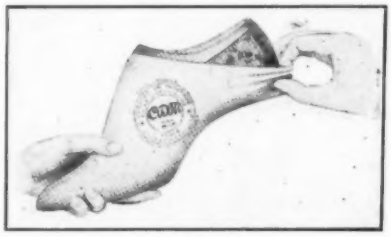
A novelty recently shown by J. G. Franklin & Sons, Ltd., 11-17 Colvestone Crescent, London, E. 8, England, is a suction soap dish, Suxon, which has won instant favor wherever shown. The dish is fitted with a suction cup and may be attached to the side of the tub or any spot

Suxon

within convenient reach of the bather.

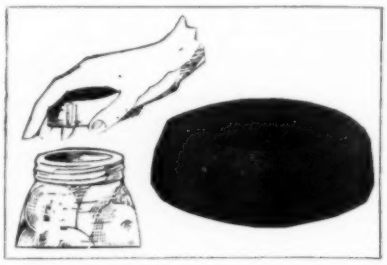
Patent Cover

Manufacturers have found it difficult and expensive to preserve the delicate materials, now in vogue for the uppers of fancy boots and shoes, from becoming soiled during the various processes of manufacture. The C. D. M. patent cover has been designed to abolish this annoyance and has been adopted by leading firms on the Continent. It is made of thin transparent rubber and fits the upper like a glove. The cover can be slipped on in a second and is guaranteed to be waterproof, greaseproof and dustproof. It may be used a second time, if desired, by tacking or gumming edges, and two old covers



C. D. M. Cover

can be utilized to make one complete cover. The manufacturer is K. W. Lowe, 175 Richmond Rd., Hackney, London, E. 8, England.

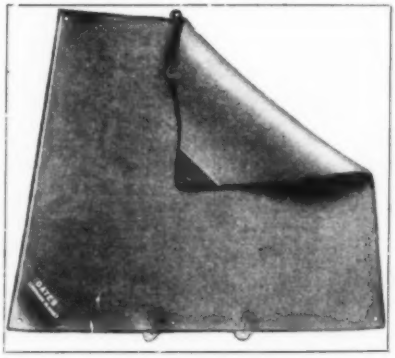


Sure-Grip

Jar Wrench

Another use for rubber has already found its way into the kitchens of thousands of American housewives. It is the Sure-Grip jar wrench manufactured by The Kristee Mfg. Co., Akron, O. It seals or removes jar caps easily and quickly, protects the hands against sharp edges and heat, and eliminates all danger of damaging top or breaking jar or bottle. The molded rubber threads inside the wrench fit the threads of the cap without slipping, thus affording a 100 per cent leverage. It fits right over the screw top and gives to the hands a vice-like grip.

Lineman's Safety Blanket



Safety Blanket

Less than two-tenths of an inch of rubber to resist 50,000 volts of electricity is the result obtained with the lineman's safety blankets manufactured by The Gates Rubber Co., Denver, Colo. The exact thickness of the blanket tested was .185 inch, and it resisted this enormous voltage for seventy-one seconds. They are made of pure rubber of the highest quality, the only fabric being a reinforcement at each corner which takes an eyelet and at the four tabs provided, two in each of two sides, for tying the blanket to the wires.

Gas Tubing

Gaspruf

A safe, flexible tubing for conveying gas, Gaspruf is made according to specifications of gas engineers and consists of two tubings in one. An inner core of rubber packed flexible galvanized steel is covered with a double jacket, and with two coverings of gasproof and gastight rubber compound, having an outer covering of lustrous silk or silkaline. The rubber packed steel core gives the strength necessary to durability, and the composition jacket makes this tubing leakproof and odorproof. The rubber ends are corrugated inside, so as to hold firmly. The manufacturer is the Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.

Universal Magic Cleaner

A cleaning rubber with a hundred uses is the description of the Universal Magic Cleaner given by its manufacturer, the Reliance Rubberware, Ltd., Formosa St. and Amberley Rd., Paddington, London, W. 9, England. It may be molded in the fingers to suitable shape and turned and recompressed as occasion demands. If required in a firmer condition it can be chilled in cold water. Excellent results can be had in removing mud from silk stockings, cleaning suede gloves and shoes, typewriter type, silverware, and various other articles.

Rubber Sunshades

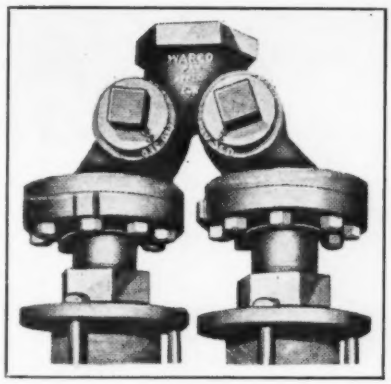
Apparently made of the most delicate crepe de chine, the newest sunshades in reality are rubber, serviceable and strong enough to be used in the hottest sun or heaviest rainfall. All the latest and prettiest colors are utilized.

Milk Bottle Cap

A real household necessity is the Anti-Germ milk bottle cap which is a product of the Davol Rubber Co., Providence, R. I. It is made of pure gum rubber, amber colored, and can be sterilized by boiling. It not only protects the contents of the bottle from contamination, but also keeps the rim and lip clean. It permits the placing of the bottle on its side in the ice box without any danger of leakage. As the cap is airtight, the milk is kept free from all odors, and the patented tab makes it easy to put on or take off the cap.

Dual Rotary Hose

For forcing mud or sludge down a drill pipe so that it may flow through apertures near the boring tools and flush debris in water upward to reinforce the hole, a novel dual rotary hose, for which a patent has been applied, is being manufactured by the West American Rubber Co., 400 North Avenue 19, Los Angeles, Calif. It comprises two sections of 2-inch hose each united to a heavy, two-way, 3-inch coupling. With each length tested to 2,000 pounds, it is claimed that the dual will not only provide for much increase in the tremendous pressures now required, but in combination will deliver as much as a 3-inch rotary hose. Valves in the couplings also permit the shutting off of either one of the hose units.



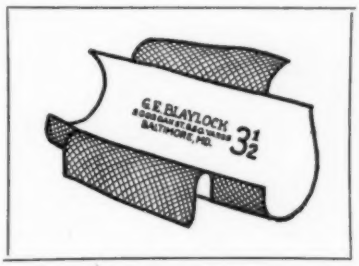
Dual Hose

Hood Galoshes

An interesting collection of new galoshes just placed on the market by the Hood Rubber Co., Watertown, Mass., is shown in the illustration.

Blowout Patch

A new and novel device for preventing swells in balloon and other tires is the Redwing patch which is marketed by the Blaylock Mfg. Co., 2002 Oak St., Baltimore, Md. The flaps on the patch are cemented with a sticky quick curing self vulcanizing red cement and when placed together and folded over, permanently lock and vulcanize from the heat of the tire into a permanent position around the inner tube, secure from slipping or creeping in any way after it is once installed. The strain is thus taken off the tire at the point of injury.



Redwing Patch

Sportsman's Knife

The Silvertip hunting knife, designed and approved by sportsmen and big game hunters, is an article of beauty which,

Silvertip Hunting Knife

however, does not detract from its sturdy construction and dependable strength. It is built for rough service and, with reasonable care, will last a lifetime. The 5⅛-inch highly polished blade is forged from high carbon stainless steel and the 4-inch embossed hard rubber handle is held in place by extra heavy nickel silver tips. The bare knife weighs 10 ounces and its length is 9½ inches, when in the tanned leather sheath the weight is 12 ounces. This article is manufactured by The Canton Knife Co., 509 McGregor Ave., N. W., Canton, O.

Letters from Our Readers

Increase Yield Per Acre

1790 Broadway, N. Y., Aug. 9, 1928.

To the Editor:

Dear Sir: Your editorial on the cost of producing rubber in the August issue of the India Rubber World leads me to write you a line on the subject. You say "Why does it cost some planting companies nearly twice as much as others to obtain the same product?" While there are, of course, other factors that enter into the question, the principal explanation, I believe, lies in two things, first, the way they keep their cost figures and, second, the standard of work that they maintain. As to the former, the question of amortization of development, account, depreciation, reserves of various kinds, bonuses to staff, etc., all enter into the calculations. As to the latter, there is the question of work done with an eye to the future, such as manuring, soil conservation, budding, etc.

Insofar as we are concerned, the goal that we are after is increasing the yield per acre, and we are spending money today which shows in our costs with the idea of obtaining far better results three or four years hence. Undoubtedly a great many of the British companies are doing the same thing.

H. Stuart Hotchkiss, President,
United States Rubber Plantation, Inc.

Standardized Hydrometer

Sets of hydrometers for liquids lighter and liquids heavier than water are common laboratory equipment in whatever line of work the laboratory may specialize. Every rubber chemist will therefore have more or less interest in the type of standardized instrument here pictured. It is very rugged and easily cleaned and a

Durac Hydrometer

fast reading hydrometer. The reason for the latter advantage is apparent in the illustration. By shape and dimensions the float makes the most of inertia and surface friction. When dropped into a liquid it sinks, then bobs up and immediately comes to rest and does not wabble sidewise.

Instead of using the usual delicate restricted neck there is the full-sized float diameter tapering down to a reinforced tip. By using a mercury weight in a conical chamber sealed off from the float by a glass septum, the center of gravity for the entire instrument always falls on the physical center line. The calibrated scales are checked at three points with a certified standard. Hiergesell Bros., 2007 Bellevue Ave., Philadelphia, Pa.

Seeks Rubber Plant in Madagascar

According to Knowles A. Ryerson, in charge of the Bureau of Foreign Plant Introduction of the United States Department of Agriculture, the latter has sent a representative to Madagascar to get rooted specimens of the *Euphorbia intisy*, a rubber-bearing plant said to be found only near East Tirucalli and which is becoming extinct. It will be experimented with at the California Botanic Garden near Los Angeles and at the government's desert aboretum at Superior, Arizona. If the plant can adapt itself to semi-desert conditions, Mr. Ryerson believes that it may be cultivated on a large scale commercially in the Southwest and may add much to the country's supply of crude rubber.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is, therefore, glad to have those interested communicate with him.

Number	Inquiry
1142	Manufacturer of rubber jewelry.
1143	Sources of supply for light caoutchoucine.
1144	Use of rubber seed oil for medicinal purposes.
1145	Manufacturer of Moac.
1146	Special machines for making molded hose.
1147	Rubber sheeting with thin felt backing.
1148	Information regarding manufacture of dipped goods.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
32,318	Belts	Hamburg, Germany	Purchase
32,326	Gymnasium apparatus	Rome, Italy	Both
32,332	Galoshes	Milan, Italy	Agency
32,368	White rubber sheeting	Paris, France	Purchase
32,385	Tires	Sabana Grande, P. R.	Agency
32,439	Soles	Paris, France	Purchase
32,477	Thread	Vienna, Austria	Agency
32,482	Blocks	Berlin, Germany	Purchase
32,483	Contraceptic and surgical goods	Calcutta, India	Both
32,484	Tires	Colima, Mexico	Both
32,485	Tires and inner tubes	Montevideo, Uruguay	Agency
32,509	Shoes	Calcutta, India	Both
32,536	Fan belts	Victoria, Canada	Agency
32,537	Tennis shoes	Calcutta, India	Agency
32,538	Tires	Mexico City, Mexico	Agency
32,542	Sporting goods	Rome, Italy	Agency
32,557	Garden hose and fittings	Amersfoort, Netherlands	Both
32,583	Tires and tubes	Madrid, Spain	Agency
32,599	Tires	Ujjain, Central India	Agency
32,617	Druggists' sundries	Santiago, Chile	Agency
32,658	Elastic bands	Hamburg, Germany	Agency
32,659	Tires	Dresden, Germany	Agency
32,660	Druggists' sundries	Loanda, Angola	Purchase
32,691	Surgical rubber goods	Vienna, Austria	Agency
32,693	Tires	Smyrna, Turkey	Both
32,705	Druggists' sundries	Calcutta, India	Both
32,709	Tires	Mannheim, Germany	Agency
32,720	Mechanical rubber goods	Vancouver, Canada	Both
32,744	Tires and tubes	Larache, Morocco	Both
32,755	Brown canvas shoes	Bremen, Germany	Purchase
32,772	Bathing shoes	Zurich, Switzerland	Either
32,773	Tires	Prague, Czechoslovakia	Agency
32,774	Goloshes	Milan, Italy	Agency
32,775	Goloshes, overshoes and tennis shoes	Vienna, Austria	Agency
32,777	Elastic knee and ankle caps	Santos, Brazil	Purchase
32,779	Tires and tubes	Swatow, China	Purchase
32,782	Medical goods	Johannesburg, South Africa	Agency
32,819	Bathing shoes	Santos, Brazil	Purchase
32,828	Rubber waste	Berlin, Germany	Agency
32,857	Tires	Johannesburg, South Africa	Agency
32,867	Druggists' sundries	London, England	Agency
32,875	Mechanical goods, packings and hose	Amsterdam, Netherlands	Both
32,876	Tires and tubes	Damascus, Syria	Agency
32,900	Tires	Jerusalem, Palestine	Both
32,901	Boots	Hull, England	Either
32,902	Bathing caps	Amsterdam, Netherlands	Both
32,903	Overshoes	Dresden, Germany	Agency
32,932	Sheet rubber	Santiago, Chile	Agency
32,940	Aprons	Chemnitz, Germany	Agency
32,945	Rubber goods	Madrid, Spain	Agency
32,950	Sport goods	Montreal, Canada	Agency
32,959	Tires	Lagos, Nigeria	Both
32,970	Gasoline hose, tires and tubes	Montreal, Canada	Purchase

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
2032	Exports of Tire Casings from Manufacturing Countries.
2033	Exports of Rubber and Balata Belting from Manufacturing Countries.
2046	Italian Tire Markets.
2052	Comparative Exports of Footwear from United States, Canada and United Kingdom the First Half of 1928.
2054	Stockholm Tire Market.
2058	Comparative Tire Exports from United States, Canada, United Kingdom and France the First Half of 1928.

Financial and Corporate News

United States Rubber Co.

TO THE STOCKHOLDERS: Following is a statement of the operations of the company for the six months ended June 30, 1928, and of the financial position of the company as of that date.

Sales for the period amounted to $88,320,329, compared with $88,110,626 for the corresponding period of 1927. There was a substantial increase in commodity units sold, which, as indicated, more than offset the much lower selling prices which prevailed.

Stated on the basis of actual conditions existing during the first six months of 1928, that is to say, before adjustment of inventories, but giving effect to the substantially reduced selling prices, including drastic reductions in tire prices which took place early in June, and which necessitated very large allowances to customers on sales previously made, and the actual cost of goods sold, the results were as follows:

Net income from operations, before interest on funded indebtedness and estimated depreciation of plants, but after all other charges, amounted to $4,338,702; income from U. S. Rubber Plantations, Inc., amounted to $1,000,000, making total income $5,338,702; interest on funded indebtedness amounted to $3,061,539, leaving net income after interest charges $2,277,163; provision for estimated depreciation of plants amounted to $2,213,772, leaving net income after all charges $63,391.

Production of rubber from the plantations owned by the company increased substantially over the same period of last year. As stated above, $1,000,000 has been taken into the income of the United States Rubber Co., which is less than the amount indicated by the preliminary reports from the plantations companies for the first six months of this year.

The unsatisfactory results as to profits, and the necessity of heavy inventory adjustments as hereinafter explained, were due to the violent decline in the market price of crude rubber caused by the uncertainty as to the policy of the British Government concerning restrictions on exports of crude rubber. At the close of last year the market price was 41½ cents a pound, which was consistent with the provisions of the British Restriction Act at that time, which fixed the pivotal price at 21 pence, equivalent to about 42 cents at New York. The company's inventories of crude rubber, as well as the rubber content in finished goods, were carried over at 40 cents a pound. On April 4, 1928, the British Government announced that restriction would be discontinued on November 1, 1928, with the result that the market broke badly and the price went below 20 cents and has since remained at about that figure. It is hoped, with the removal of governmental restrictions and with the market price of rubber more nearly at the cost of production, that the menace of a widely fluctuating rubber market is largely removed.

It has not been customary in years past to adjust inventory values except at the close of the fiscal year, but in view of the unsatisfactory conditions in the rubber industry during the past six months due to the circumstances referred to, it was decided to write down, as of June 30, 1928, all elements of crude rubber to the market price of 20 cents a pound. The advantages resulting from these adjustments will be reflected in the operations of the second six months.

Crude rubber inventories as of June 30, 1928, were written down to 20 cents a pound. This necessitated a devaluation, including full provision for this company's proportion of the rubber held in the National Crude Rubber Reserve, amounting to $7,810,279. Forward commitments for crude rubber were for conservative quantities and at prices averaging approximately at market values, as was also crude rubber in transit to New York.

Inventories of finished goods and goods in process were written down, as to the rubber content therein, to the basis of 20 cents a pound. This necessitated a devaluation of $6,337,380, covering all merchandise at factories and domestic and foreign branches. This does not represent a loss of value, inasmuch as the actual cost of production, before adjustment, indicates a profit at the current selling value of these goods after allowing for all selling and operating charges. Notwithstanding this fact, the adjustment was made in order to state the company's financial position with all elements of rubber at 20 cents a pound. The current financial position of the company as of June 30, 1928, was as follows:

CURRENT ASSETS AND LIABILITIES

Current Assets			
Cash	$8,378,521		
Accounts receivable, less reserve for doubtful accounts	44,964,073		
Total cash and receivables		$53,342,594	
Inventories			
Finished goods	40,716,599		
Materials and supplies, including goods in process	22,484,838		
Crude rubber in transit to N. Y.	2,608,800	65,810,237	
Total current assets			$119,152,831
Current Liabilities			
Bank loans		17,750,000	
Accounts payable and accruals, including balance payable to crude rubber agency for this company's proportion of difference between cost and market		13,523,858	
Acceptances payable for importation of crude rubber		5,481,542	
Drafts and acceptances for crude rubber in transit to N. Y.		1,953,036	
Total current liabilities			38,708,436
Net working capital			$80,444,395

C. B. SEGER, Chairman.

New York Stock Exchange Quotations

August 22, 1928

Company	High	Low	Last
Ajax Rubber	8½	8⅛	8⅛
Fisk Rubber	10⅛	10	10
Fisk Rubber, 1st pfd. (7)	61¾	61¼	61½
Goodrich, B. F. (4)	80⅜	78½	79¼
Goodyear Tire & Rubber, com.	61¾	60	61½
Goodyear Tire & Rubber, 1st pfd. (7)	98	98	98
Intercontinental Rubber	10	10	10
Kelly-Springfield Tire	20¼	19	19⅝
Lee Rubber & Tire	21¾	20¾	21¾
Norwalk Tire & Rubber	4	4	4
Norwalk Tire & Rubber, pfd.	38	38	38
U. S. Rubber, com.	33⅜	32½	32⅞
U. S. Rubber, 1st pfd.	65½	64¾	64¾

Akron Rubber Stock Quotations

August 21, 1928

COMPANY	Bid	Asked
Akron Rubber Reclaim	..	21½
Akron Rubber Reclaim, pfd.	..	96
Falls	11	12½
Faultless	32½	34
Firestone	170	180
Firestone, 6% pfd.	110¼	110½
Firestone, 7% pfd.	..	110
General	165	175
General, 6% pfd.	98	100
Goodrich	76	77
Goodrich, pfd.	111½	112½
Goodrich, 6½%	107¼	108¼
Goodyear	55⅞	56⅞
Goodyear, 1st pfd.	98⅛	99⅛
Goodyear, 5s '28	99¼	99⅞
Goodyear, 5s '57	90½	91½
Goodyear, 5½s, '31	100½	100¾
India, com.	42½	43
India, 7% pfd.	..	97
Mason	¾	..
Mason, pfd.	..	9
Miller	18	19
Miller, 8% pfd.	79	80
Mohawk	158	160
Mohawk, 7% pfd.	..	90
Rubber Service	..	37
Seiberling	44	45½
Seiberling, 8% pfd.	105	107½
Star	..	5
Star, 8% pfd.	..	8

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Com.	$1.50 q.	Sept. 15	Sept. 1
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	Aug. 15	Aug. 1
Goodyear Tire & Rubber Co.	1st Pfd.	$1.75 q.	Oct. 1	Sept. 1
Goodyear Tire & Rubber Co.	Pfd.	$1.75 q.	Oct. 1	Sept. 1
Hood Rubber Co.	Pfd.	$1.75 q.	Sept. 1	Aug. 20

New Incorporations

AKRON RUBBER MFG. CO., INC., July 28 (New York), $15,000. L. M. Wieder, 261 Broadway, C. Boskowitz, 1898 Billingsley Terrace, and M. Wieder, 1557 Hoe Ave., all of New York, N. Y. Principal office, Manhattan. To manufacture rubber goods.

AYERS TIRE SERVICE CORP., August 22 (New York), capital stock 100 shares no par value. E. D. and A. J. Ayers, both of 723½ W. Gray St., and H. I. Tong, 211 W. Second St., all of Elmira, N. Y. Principal office, Elmira, N. Y. To manufacture tires.

BROADWAY RUBBER COAT MFG. CO., INC., August 16 (New York), $20,000. S. S. Morris, 253 W. 73 St., C. Phillips, 611 W. 177 St., and M. B. Roberts, 214 Audubon Ave., all of New York, N. Y. Principal office, Manhattan. To manufacture rubber goods, water proof clothing.

HOLLIS TIRE CO., INC., August 11 (New York), $10,000. L. Schmall, B. Glass, and D. Cohn, all of 302 Broadway, New York, N. Y. Principal office, Mineola, N. Y. To manufacture rubber tires, etc.

SAM SINGER RUBBER & METAL CO., INC., August 22 (New York), $5,000. S. Singer, 285 Quincy St., B. Kotler, Boerum St., and A. Arkel, 1930 50th St., all of Brooklyn, N. Y. Principal office, Kings County, N. Y. To manufacture rubber and metallic accessories.

SPRINGLASTIC, INC., August 11 (New York), capital stock 200 shares no par value. B. B. Goldstein, M. Siegel, both of 2 Lafayette St., and H. I. Schwartz, 647-5th St., all of New York, N. Y. Principal office, Brooklyn, N. Y. To manufacture rubber, elastics, rubber clothing, balata, etc.

WATKINS TUBELESS TIRE CORP., August 4 (New Jersey), $15,000. J. H. Royall, C. Aschenbach, both of 500 Chestnut St., Phila., Pa., and J. H. Landau, 4725 Whittaker Ave., Camden, N. J. Principal office, 632 Kaighn Ave., Camden, N. J. To manufacture all kinds of pneumatic and balloon tires and tubes.

Photomicrographic Camera

THE illustration herewith pictures the assembly of special reproduction stand, camera and microscope for taking microphotographs. The electric illumination of the object being photographed

Leica Camera for Photomicrography

is furnished by the instrument at the left of the picture. The camera shown is the "Leica." It is mounted on a support which is calibrated for convenience in setting the camera for making either a still or a moving picture of the image in the microscope.

With such an apparatus Dr. Ernst A. Hauser was able to secure a moving picture which enables one to observe the progress of vulcanization under the microscope. The successful taking of such a picture depends upon the perfection of every feature of the various instruments assembled and their accurate mutual adjustment. With the set-up illustrated the photographic exposure is reduced to simply pressing a button. E. Leitz, Inc., 60 East 10th St., New York, N. Y.

Freezing Fire

HIGHLY interesting and instructive demonstrations are being conducted before the fire departments of various cities and at many factory plants of a novel adaptation of carbonic acid gas for extinguishing fire by virtually freezing it. The material used is known as "Fyre-Freez", is liquid carbonic acid gas stored under pressure in a portable hand operated gas cylinder or tank. The operating equipment consists of a specially designed quick

Fyre-Freez Extinguishing a Lacquer Fire. Insert—Portable Factory Extinguisher

opening valve requiring only a turn of the wrist to release the full contents of the extinguisher under its own pressure, through a short metal hose and a long flaring tube outlet.

When released from the extinguisher, the gas, due to its rapid expansion and high heat capacity, instantly freezes into a dry carbonic snow. This snow is intensely cold—(110 degrees below zero). It does not melt but sublimes directly into a gas. The extinguishing effect of Fyre-Freez is threefold: the blanketing effect of the carbonic gas; the intense chilling effect of the carbonic snow, and most important, the extinguishing of fires without spoilage.

Carbonic acid gas leaves no mark, discoloration or residue and is entirely harmless to anything with which it comes into contact. It does not deteriorate and can be used effectually to extinguish fires at a distance of 10 feet because of the blanketing effect of the gas and its chilling effect as it absorbs heat and turns to intensely cold dry snow.

A similar successful demonstration was recently made by New York Fire Department engineers and by the fire departments of Providence, and Newport, R. I., and at many other points. Fyre-Freez Corp., 17 West 46th St., New York, N. Y.; Utility Mfg. Co., Cudahy, Wis., agents for the rubber industry.

CANVAS RUBBER SOLED SHOES IMPORTED INTO MANILA, PHILIPPINE ISLANDS, during 1926 averaged 79,000 pairs a month. This business is divided among eight well-known American manufacturers, one of whom has its own office there and receives the largest individual share of the trade.

The Rubber Industry in America

Ohio

The Mansfield Tire & Rubber Co., Mansfield, O., is operating at capacity output producing with three shifts 5,300 tires daily. A large extension is being built on to the main factory building to gain increased manufacturing area. The company has added to its line a super cord tire capable of making upwards of 25,000 miles.

The Faultless Rubber Co., Ashland, O., has completed its line of druggists' sundries for the coming season. It includes several exclusive specialties beside a full line of water bottles and fountain syringes in pastel colorings and artistic marbleized effects. High grade water cured gloves for surgeons' use guaranteed to withstand 15 sterilizations while maintaining high tensile quality are typical of the high grade of goods produced by this company.

The B. F. Goodrich Co., Akron, O., is operating its tire department on three shifts producing 36,000 tires daily.

The Goodyear Tire & Rubber Co.'s Akron plant is producing 60,000 tires daily on its summer schedule.

The Pennsylvania Rubber & Supply Co., Cleveland, O., has added Youngstown, Springfield and Columbus, O., and Oil City, Pa., to its list of brancnes distributing the Vulco line of tires and tubes, manufactured by the Gates Rubber Co., Denver, Colo.

The Mason Tire & Rubber Co., Kent, O., has resumed operations after a suspension of about six weeks. The company now employs one hundred and fifty men at its Kent plant, with sixty at work in the textile division, and the factory, which is in the hands of a receiver, will continue on the present basis until November 1.

A. F. Osterloh, connected with the Goodyear Tire & Rubber Co. for the past twenty-four years, has joined the Chicago advertising agency of Erwin, Wasey & Co., to serve in an executive capacity. Mr. Osterloh originally served the Goodyear company as secretary, having his headquarters at Akron, but subsequently was made vice president and general manager of the California division located at Los Angeles.

A. M. Hamblet, formerly manager of the research laboratories for Goodyear, has joined the Johns-Manville Co., Manville, N. J., as development manager.

The General Tire & Rubber Co. increased its accessory sales for the first eight months of the fiscal year ending August 1, 27 per cent over the same period last year. The new rubber tire flap and tire luster were two items contributing to this increase, according to F. P. Harrington, accessory sales manager.

The Firestone community golf course, the first nine holes of which are completed, was formally opened August 11, with Harvey S. Firestone, Sr., and Mayor G. Lloyd Weil competing in the first play over the course. When completed, the course will be of 36 holes, and is intended for Firestone employes and residents of Firestone park.

The B. F. Goodrich Co., Akron, O., held an industrial picnic at Euclid Beach Park, Cleveland, on August 13. Approximately fifty sports events were provided, a beauty contest held, and the final baseball game played for the Goodrich plant championship.

F. J. Wilson, president of the Wilson Rubber Co., Canton, O., is attending the American Hospital Association convention at San Francisco, Calif., and will return to Canton by way of the Canadian Rockies. Karl Herbruck, treasurer of the company, reports business in excellent health and prospects splendid for the future.

Seiberling Rubber Co., Akron, O., reports that sales for July exceeded $2,000,000, an increase of 41 per cent for the same period last year.

The Ohio Rubber Co., Willoughby, O., is constructing additions to its factory and office buildings. This expansion is made necessary by increased business, and will represent a $50,000 investment, the major portion of which is being used in the shipping department of one-story steel frame construction. The Ohio company was established in 1893. Officers are: Henry Hallock, president and general manager and C. Edward Hyke, plant manager.

G. E. Habich has joined Harriss, Irby & Vose, New York Cotton Exchange Bldg., New York, N. Y., and will assist Harold H. Henderson in the Akron office. Mr. Habich has had many years' experience as a rubber broker, both in Boston and New York.

Harriss, Irby & Vose not only specializes in rubber in its Akron office, but also in stocks and all commodities, and enjoys a very good business in each department.

Frank K. Espenhain, former first vice president of the Goodyear Tire & Rubber Co., was injured when a car in which he was riding near Albuquerque, N. M., was overturned in a ditch. With him was Mrs. Espenhain and Mr. and Mrs. Arthur Kudner of Chicago.

T. A. Seacrist, general manager of The Akron Gear & Engineering Co., Akron, O., enjoyed with his family a motor trip to Rochester, N. Y., and Montreal, Canada.

Miller's Export Manager Sails for Europe

C. E. Wagner, export manager of The Miller Rubber Co., Akron, O., sailed from New York on the SS. Columbus, August 11, for Bremen, on the first lap of an eight months' tour of Europe which will include visits to twenty nations. The visit is in the nature of a return call on European importers whom Mr. Wagner has met in the course of his duties.

C. E. Wagner

In his fourteen years' connection with the Miller company, Mr. Wagner has developed its exports business from "scratch" to a very large volume of sales in approximately ninety foreign countries. Besides his position as export manager he is also managing director of The Miller Rubber Export Co., Ltd., also of Akron.

Previous to his association with Miller he was in the importing business in New York and Mexico City, and has spent considerable time in Europe.

Mr. Wagner has been active in many professional organizations of exporters and is a member of the Foreign Trade Managers' group of the Cleveland Chamber of Commerce, and a member and past chairman of the Foreign Trade Division of the Akron Chamber of Commerce. He is also a member of the Export Managers' Club and the Overseas Automotive Club, both of New York City.

G. C. Canfield, salesman in the Chicago and Pittsburgh territories for the Firestone company, for the past two years, sailed for Capetown, S. Africa. He will temporarily assist C. A. Whowell, export department representative, but later his duties will be confined to Johannesburg where he will be connected with the Firestone distributer.

C. A. Stillman, vice president of the Goodyear Tire & Rubber Co., Akron, O., was named chairman of the citizen finance groups, organized to meet the city's deficit.

George W. Sherman, 964 Hazel St., Akron, O., is offering for sale the rubber machinery and equipment from the Akron plant of the Kelly Springfield Tire Co.

Suekichi Nakagawa, president of the Yokohama Rubber Co., and Kanesaburo Miyamatsu, secretary to the president, are visiting in America to acquaint themselves with the latest developments in rubber products manufacture. The B. F. Goodrich Co. is financially interested in the Japanese plant.

The India Tire & Rubber Co., Akron, O., held an all-day picnic for employes, August 11, at Brady Lake Park. Both offices and factory were closed for the day.

The American Rubber & Tire Co., Akron, O., filed a voluntary petition in bankruptcy and Frank Burch, Akron attorney, was named receiver. The bankruptcy proceedings were started as the best way to effect a reorganization of the company. Floyd H. Snyder is president.

General Tire & Rubber Co. officials attended the formal opening August 13, of the new Cleveland branch located at 2025 Chester Ave. It is said to be one of the best small commercial buildings west of New York and was erected at a cost of $50,000.

Edward F. Gerber Co., Akron, O., who refinances or liquidates rubber manufacturing companies, is offering for sale the machinery and equipment of the Star Rubber Co., Akron, O.

R. D. McDowell, president of The India Machine & Rubber Mold Co., Akron, O., manufacturer of India cores and chucks reports that business is good and prospects for the immediate future very bright.

Fyre-Freez Corp., 17 W. 46th St., New York, N. Y., will give a demonstration duplicating fire hazards met with in the rubber industry on Sept. 20 at 2 p. m. This demonstration will be under the direction of the Utility Mfg. Co., Cudahy, Wis., in cooperation with the fire chief and will take place at Fire House No. 5, East Buchtal, Akron, O.

Goodyear's Insurance Plan

Through the Goodyear Investment Corp., the Goodyear Tire & Rubber Co., Akron, O., has arranged with the Metropolitan Life Insurance Co. to reinsure the pension plan which has been in operation a number of years to Goodyear employes. This is the first contract of the sort made in this country between an industrial corporation and an insurance company, the reinsurance plan providing a guarantee of the rubber company's voluntary pension commitments. Under the new arrangements, contractural relations exist solely between the insurance company and the investment corporation, the latter, through the Goodyear Tire & Rubber Co., dealing directly with the employes.

The arrangement provides the maximum of security and soundness with the minimum of administrative detail and expense.

Phil Kelly Advertising Manager Goodrich Co.

Mr. Kelly was just recently appointed advertising manager of The B. F. Goodrich Rubber Co., succeeding Gates Ferguson who resigned to take up work in the East.

Mr. Kelly is a native of Chicago and an alumnus of the University of Illinois.

Phil J. Kelly

He served during the war as an army aviator. Upon his return to civilian life he became identified with the Goodyear Tire & Rubber Co., specializing in sales and advertising work. Following six years in this field, Mr. Kelly entered the retail tire and auto business in Chicago, but eventually sold his interest to become advertising manager of the Mason Tire & Rubber Co.

For the past year he has been assistant advertising manager at Goodrich, and has become well known locally as well as throughout the branch territories of the Goodrich company. Mr. Kelly is married and has two children. His residence is at Kent, O.

The Dayton Rubber Manufacturing Co.

According to John A. MacMillan, president and general manager of The Dayton Rubber Manufacturing Co., Dayton, O., the business of his company was quite satisfactory for the first seven months of 1928. In spite of the fact that the production capacity of the plant was increased 50 per cent over 1927, three eight hour shifts have been in operation continuously, producing 2,500 or more tires and 3,000 or more tubes daily. Additional mills and mold and vulcanizing equipment have recently been ordered and will be installed within the next few weeks and plans are being worked out to run production of tires and tubes, during 1929, up to 3,500 per day.

The company's financial statement as of July 31 shows current quick assets of $2,828,668.13, with current liabilities of only $838,859.85.

Midwest

The Beacon Falls Rubber Co., Beacon Falls, Conn., announces that the branch formerly in Kansas City is being moved to St. Louis from which point additional territory may be served. John J. Meacham will be in charge of this new branch.

The Corduroy Tire Co., Grand Rapids, Mich., reports that in the past three months there has been an increase of 150 per cent in the sales of its truck and bus tubes.

The Rubber Patents Corp., recently organized, will have its headquarters in the Houseman Bldg., Grand Rapids, Mich., and will maintain sales offices in New York City, Chicago and Los Angeles. The company has purchased patents and manufacturing rights for a line of surf and beach balls which will be manufactured by the Corduroy Tire Co. on a contract basis. R. W. Hook is president, David A. Warner, vice president and Heber W. Curtis, secretary-treasurer of the new company.

The Schacht Rubber Mfg. Co., Huntington, Ind., has purchased the Steinbrenner Rubber Co., Noblesville, Ind. The former company plans to increase its fruit jar ring business and will be known hereafter as the Schacht Rubber Mfg. Co. of Huntington and Noblesville, Ind. W. J. Schacht is president.

Panama Rubber & Equipment Co., 3325 Lindell Boulevard, St. Louis, Mo., has taken over the plant of the Bunker Hill Rubber Works at Bunker Hill, Ill. The Panama company which originally manufactured raincoats only, now includes in its line battery and rubber supplies, bath sprays, rubber tubing and other molded rubber specialties. C. G. Schwarz is president and G. G. Giese, secretary and treasurer.

The Gillette Rubber Co., Eau Claire, Wis., recently completed a two story reinforced concrete and brick addition to its tire shipping department. The company has now under construction a new gasoline storage, cement mixing and laboratory building, also of reinforced concrete and brick, which will be completed about September 1.

The Bay City Rubber Co., recently organized by a group of eastern men, has purchased the Wildman Rubber Co.'s plant at Bay City, Mich. The new company will be managed by H. J. Lucier of Boston, and expects to have the plant in operation within the next few months.

The Archer Rubber Co., Milford, Mass., has opened an office at 1307 Washington Ave., St. Louis, Mo. H. F. Ruwwe, who was connected with the Goodyear Rubber Co. of St. Louis for twenty-nine years, will have charge of the office. A stock of staple merchandize will be carried.

CANADA IMPORTED IN JUNE, 1928, 2,632 long tons of crude rubber.

United American Plantations, Inc.

Announcement has been made of the granting of a charter in the State of New York to a company, the United American Plantations, Inc., whose purpose, it is said, is to develop rubber plantations. The directors of the company are Edgar B. Davis, Luling, Tex.; Walter B. Mahoney, Scarborough, N. Y., and David M. Figart, 368 Madison Ave., New York, N. Y. A formal announcement of the company's plans will be made at a later date when they have more definitely matured.

Mr. Davis, a former director of the U. S. Rubber Co., has long been associated with the rubber industry and is known to share Harvey Firestone's view that America should develop her own sources of crude rubber. Mr. Mahoney, a lifelong associate of Davis, is a director of the Goodyear Tire & Rubber Co. and editor of the *North American Review*. Mr. Figart, the third director, is a well known statistician in the trade and was a member of the committee appointed a few years ago to investigate the entire crude rubber situation for Congress. Mr. Davis and Mr. Mahoney are reported to be on their way to the East.

Papers of incorporation were filed at the same time for the United Rubber Research Corp., said to be an allied concern to carry on research and laboratory work for the larger unit. The same directors are named as for the plantation company.

Seventeenth Annual Safety Congress

The Seventeenth Annual Congress of the National Safety Council will be held in New York City, October 1-5, 1928. The program schedule of events for every day of the congress indicates a busy and interesting week for those who attend. Among the thirty or more sections holding sessions the program of papers to be read at the Rubber Section is of special interest to readers of this journal. The list includes the following titles:

"Safety in the Design and Use of Vulcanizers," by G. W. Cook, Travelers Ins. Co., Hartford, Conn.

"Static Electricity in the Rubber Industry," by F. J. Hoxie, Associated Factory Mutual Fire Ins. Co., Phenix, R. I.

"Ramification of Safety Interest," by W. S. Smith, Milwaukee Assn. of Commerce, Milwaukee, Wis.

"Health Hazards in the Rubber Industry—Organic Accelerators and Anti-oxidants," by L. J. D. Healy, technical superintendent, Federal Div., Fisk Rubber Co., Cudahy, Wis.

Address by S. P. Thatcher, U. S. Rubber Co., Detroit, Mich.

"Safety Kinks," by C. L. Hungerford, Div. of Safety & Hygiene, Firestone Tire & Rubber Co., Akron, O.

THE NATIONAL SAFETY COUNCIL suggests as a slogan to the prospective employer: "No matter how good you are otherwise, if you are not careful, you are not wanted."

New England

The Converse Rubber Shoe Co., Malden, Mass., is under the receivership of Morton L. Paterson, president of the company. Turner Halsey Co. of New York, cotton converters, recently filed a bill in equity in the Federal Court of Boston asking for the appointment of a receiver. The bill of complaint alleges that on or about July 27, Converse had indebtedness of about $2,233,263, exclusive of capital stock. Assets consisted of $38,000 in cash, $317,000 in notes and accounts receivable, $850,000 in inventories, $1,000,000 in plant and equipment and certain other miscellaneous assets making total assets, exclusive of good will, in excess of $2,350,000. Considering the sound condition of the company, Federal Judge Lowell appointed Mr. Paterson receiver, setting a bond of $50,000. The principal difficulty of the company is lack of working capital, due largely to its venture into the tire business wherein losses of $1,700,000 were sustained. The company has now abandoned the tire field and is engaged in the exclusive manufacture of rubber footwear.

Everett Gibbs, formerly of the development department of the Fisk Rubber Co., Chicopee Falls, Mass., has resigned to accept a position with the Seiberling Rubber Co.

The Firestone Footwear Co. of Hudson, Mass., suspended factory operations July 30. General Manager John M. Miller ordered the shutdown pending an examination of the huge 120 foot metal smokestack damaged by the high windstorm of the day before.

The Terkelsen Machine Co., 326 A St., Cambridge, Mass., is planning to construct a two story addition which, with equipment, will cost about $28,000.

Bristol Co., Waterbury, Conn., manufacturer of recording instruments, plans to build a one story addition, which will cost, with equipment, about $45,000.

The Canton Manufacturing Co., Canton, Mass., has been recently organized to manufacture rubberized fabric and miscellaneous rubber articles. The new concern has taken over the former Grow Tire Co., of Canton Junction and will employ about 150 persons.

The Ginsberg Junk Co., Inc., of Boston, Mass., has been chartered to deal in the wholesale and retail waste business, handling rubber paper stock, scrap iron, metal, etc. The officers of the company are Samuel Ginsberg, president; Max Ginsberg, treasurer.

H. Parigian, a recent graduate of Lowell Textile School, is now associated with Cambridge Rubber Co., Cambridge, Mass. Mr. Parigian is at present working in the development department.

The Murray Rubber Co., Trenton, N. J., has opened a branch in Boston, Mass., at 96 Brookline Ave., where a full line of mechanical rubber goods, tires and tubes will be carried. K. W. Reece will be in charge, and M. J. Dickinson and John Barnard will work out of the branch.

Orderliness Aid to Safety

Statistics show that from eight to ten per cent of accidents are due to workmen slipping, tripping and tumbling, and about twelve per cent are due to men being struck by falling material. Objects strewn about the floor, piles of material falling over, greasy and wet floors, fruit peelings, etc., are some of the causes of serious accidents, showing that orderliness should be one of the fundamental laws in all plants.

One of the largest conveyer belts ever made by the Boston Woven Hose & Rubber Co., Boston, Mass. Its dimensions are: length, 667 feet; width, 54 inches; weight, 17,272 pounds; 10-ply with 3/8-inch cover on carrying side.

New Jersey

Rubber manufacturing conditions throughout New Jersey show some improvement. Tire and tube manufacturers announce there has been an increase in production during the past month. Factories producing mechanical rubber goods report increased orders for belting and packing and the various kinds of hose. The output of heels and soles continues good, while the demand for brake lining and automotive rubber parts is about the same as last month.

Arthur E. Moon, Yardley, Pa., secretary and treasurer of the Essex Rubber Co., Trenton, N. J., who was under treatment in a Philadelphia hospital for several weeks, has recovered and is now able to attend to his duties again.

Mr. and Mrs. Robert J. Stokes and son, Jack, have returned home after spending a month at Chatham, Mass. Mr. Stokes is president of the Thermoid Rubber Co., Trenton, N. J.

Theodore S. Cart, secretary of the Pocono Rubber Cloth Co., Trenton, N. J., has returned with his family after spending several weeks at Lake Placid, N. Y.

Clifford H. Oakley, president of the Essex Rubber Co., Trenton, N. J., and his family have been spending some time in the Pocono Mountains.

General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., Trenton, N. J., was painfully injured on August 9 in an automobile accident at Adelphia, N. J. He was driving his car to his summer home at Spring Lake when another machine crashed into him. General Murray was jammed against the steering wheel and considerably bruised.

The Ajax Rubber Co., Trenton, N. J., may sell its plant at Trenton to a group of Philadelphia tire engineers and capitalists if pending arrangements are completed. This has been announced by Edward M. P. Murphy, Inc., of New York, agents for the disposal of the plant. Agents of the Philadelphia group recently made a thorough inspection of the Trenton plant and found it ready for operation.

The Raritan Rubber, Inc., New Brunswick, N. J., has been working, during the past six months, day and night, in order to keep up with the demands for solid and cushion tires. This year's business shows an increase over last year. The company expects to add an addition to its warehouse and install new machinery. The contract for the State Highway for solid tires has been received for July, 1928, to July, 1929.

The Murray Rubber Co., Trenton, N. J., reports that business is good in all its departments and the prospects are good for some time to come.

William J. B. Stokes, treasurer of the Thermoid Rubber Co., Trenton, N. J., has contributed a sum of money to the Trenton High School Students' Fund. The fund goes towards the education of young men who desire to attend college.

The Essex Rubber Co., Trenton, N. J., reports that business is showing some improvement over last month and that all departments are now busy. Orders for soles and heels are increasing.

Whitehead Brothers Rubber Co., Trenton, N. J., is operating a few nights each week to keep up with increased orders. The concern is particularly busy in the hose and belting departments.

The Luzerne Rubber Co., Trenton, N. J., reports that business has shown little improvement during the past month.

Death of Joseph Bartine

Joseph L. Bartine, former vice president of the Luzerne Rubber Co., Trenton, N. J., died at his home at Trenton on August 5, in his 77th year. Mr. Bartine was born in Philadelphia and came to Trenton in 1894, having previously made his home in Newark. In 1914 he sold his interests in the Luzerne Rubber Co. and retired.

Prominent Rubber Executive

W. O. RUTHERFORD, recently called to the presidency and directorate of the Pennsylvania Rubber Co. of America, Inc., Jeannette, Pa., is one of the outstanding figures in the American rubber industry, his experience of nearly 28 years covering practically every phase of large-scale manufacturing and merchandising. Born in 1874 in Fairview, Butler Co., Pa., he went to Akron when very young and there got a good grammar school and business college training. In 1898 he saw active service in the Spanish-American War as an officer of the 8th Ohio Volunteers. His first acquaintance with the rubber trade came in 1900 when he joined The B. F. Goodrich Co.'s sales force. His advancement through sheer ability from the ranks was rapid. When automobile making began to develop in Detroit he was sent there to look after Goodrich interests, and his success soon earned him promotion as district manager at Denver. A year and a half later he entered on a long term of service as Buffalo branch manager.

In 1910 Mr. Rutherford was recalled to Akron. In 1914 he was made assistant general manager of sales; and in 1916 general manager with the task of distributing a multitude of products through more than 70 branches employing over 500 salesmen. He was elected as a second vice president in charge of sales and a member of the executive committee in 1918. Last January he resigned as vice president.

In 1922 Mr. Rutherford was chosen as vice president of the Rubber Association

Blank-Stoller, Inc., N. Y.

W. O. Rutherford

of America, and, in addition to being a director, later served as president (first in 1924) for three terms. He was honored in 1922 with appointment as head of the foreign trade commission of the Motor & Accessory Manufacturers' Association, of which he was a director, following a request from the Bureau of Foreign & Domestic Commerce at Washington for cooperation in extending the sale of motor products overseas. He became president of the association in 1923. He has also served as director of the Lincoln Highway Association and the Pan-American Highway Education Board.

Possessing a forceful, agreeable personality, remarkably well versed in general affairs, and having been an extensive traveler, Mr. Rutherford has won a world-wide circle of friends. He brings to his new position a rare combination of talents and knowledge that can not fail to greatly aid his coworkers in the big plant as well as to imbue the sales force with livelier enthusiasm.

Mr. Rutherford's activities include those of vestryman and chairman of the finance committee of St. Paul's Episcopal Church, Akron, and member of the Portage Country, Akron City, and Detroit Athletic Clubs. He is also a 32nd degree Mason, Shriner, Knight Templar, and a life member of the Army of Santiago. His home address has long been at 630 Diagonal Road, Akron. It is stated that this may soon be changed to suit his duties at the Pennsylvania works.

Eastern and Southern

The Annual Safety Congress will be held in New York City, during the week of October 1 to 5. Plans are under way to make it the most profitable session ever held.

The Electrical & Industrial Exposition will be held on October 17, 18 and 19 in the Grand Central Palace, New York, N. Y. This will be the first electrical trade show ever held anywhere, and it will be nationwide in scope. Arthur Williams, vice president in charge of commercial relations of The New York Edison Co. and president of the exposition, explains that the trade show is an expansion on a national basis of the annual electrical show, with the first three days set apart exclusively for the trade and the final seven days open to the general or consuming public.

The Everlastik Webbing Export, Inc., 1107 Broadway, New York, N. Y., was organized to manufacture webbing, elastic and non-elastic. Bertram T. Martin is president.

Parker, Stearns & Co., Sheffield, Belmont and Georgia avenues, Brooklyn, N. Y., at a specially called meeting elected J. Russell Parker, president; E. Ward Stearns, vice president and treasurer; and I. K. Chichester, secretary.

R. R. Olin, of the R. R. Olin Laboratories, Akron, O., delivered an address at the convention of The Imperial Color Works, Glens Falls, N. Y. The subject of the address was "Methods of Rubber Manufacture."

V. G. Thomas & Co., 99 John St., New York, N. Y., agent for the Derby brand of oxides, is also agent for The Antimony Products & Chemical Co. of England. The latter company is composed of the King Bros., formerly connected with Typke & King, Ltd., and their associates.

W. E. Downs, for the past seven years with the C. Kenyon Co. and the Vulcan Proofing Co., has joined the sales organization of The Naugatuck Chemical Co. and will have his headquarters at 1790 Broadway, New York, N. Y.

The Safety Cable Co., 420 Lexington Ave., New York, N. Y., division of the General Cable Corp., has appointed D. R. G. Palmer as its president.

Edward C. Sweeney has become associated with Whitehouse, Davis & Co., Inc., 27 Water St., New York, N. Y., and will assume charge of the general import and the crude rubber and kindred products departments.

The American Schaeffer & Budenberg Corp., 338 Berry St., Brooklyn, N. Y., has been purchased by Manning, Maxwell & Moore, Inc. The business will be conducted by the Consolidated Ashcroft Hancock Co., Inc., an operating company owned by Manning, Maxwell & Moore.

Harmon S. Graves, of the firm of Graves & Yawger, Chase National Bank Building, 20 Pine St., New York, N. Y., has been appointed general legal counsel to the Rubber Institute.

The Warren Rubber Co., 71 Spring St., New York, N. Y., makes rubber mats, specialties, and molded goods generally. Joseph H. Katz is president.

The Lake Erie Engineering Corp., Buffalo, N. Y., reports business as very good and the plant running at capacity.

R. E. Dillon, general manager of the Lake Erie Engineering Corp., Buffalo, N. Y., is vacationing with his wife at the Pytonga Fish & Game Club, a private preserve north of Ottawa, Canada.

The Buffalo Foundry & Machine Co., Buffalo, N. Y., is optimistic over business conditions and reports favorable progress during the year.

The Hewitt-Gutta Percha Corp., Buffalo, N. Y., is operating at single shift production in its high class lines of mechanical goods, packing, tiling and molded goods.

The Beacon Falls Rubber Co., Beacon Falls, Conn., has transferred Andrew F. Mosy to its New York office from which point he will direct the activities of both the New York and the Pittsburgh branches. The larger portion of New York state, formerly served by the New York office, will receive service in the future direct from the factory at Beacon Falls, under the direction of G. Ray Simons, manager of sales.

The Firestone Tire & Rubber Co., Akron, O., has had plans drawn for a new factory branch and distributing plant at Jacksonville, Fla., to cost, with equipment, about $300,000.

Evening Engineering Courses

The Polytechnic Institute of Brooklyn, N. Y., offers this fall to engineers, chemists and other technicians located in the metropolitan district four graduate courses in the evening which lead to the degree of Master of Science in Chemistry, or of Master of Civil, Electrical, or Mechanical Engineering upon completion of 30 semester hours of advanced study and upon the submission of a satisfactory thesis.

Graduate classes will open on September 24, and registration may be made on and after September 10 by application to the Dean. The Polytechnic Institute is located on Livingston and Court streets, immediately adjoining Borough Hall in Brooklyn.

Safety Bulletin

The *Goodyear Safety News* is issued monthly to all foremen in the plant, and contains safety items of value in accident prevention work.

Forceful Factor in Rubber Importing

Otto Meyer, president of The Meyer & Brown Corp., crude rubber importers, 347 Madison Ave., New York, N. Y., has an enviable standing in the crude rubber business, the reward of straightforwardness and a long and varied experience. Born in Hamburg, Germany, in 1874, he graduated from the high school of his native city in 1890. Rubber attracting him, in the same year he entered the

Marques Studios

Otto Meyer

employ of the Hamburg importing firm of Herman Marcus, purchasing agents for Heilbut, Symons & Co. In 1896 he came to the United States as a clerk for the Liverpool firm of Sgal & Co., which had established a Boston office. When this firm was succeeded by Livesey & Co., Mr. Meyer became its official representative in Boston, and soon built up an extensive trade in the New England field. In 1901 he also became the Boston representative of the New York firm of A. T. Morse & Co., one of the pioneer American dealers in crude rubber.

Mr. Meyer in 1903 was brought to New York and made a partner in the Morse concern. When in 1912 A. T. Morse and his brother, C. H. Morse, decided to retire. Mr. Meyer took over the business with Andrew H. Brown, who had been with the Morse firm since 1908. The partnership of Meyer & Brown soon became a forceful factor in rubber importing, and in 1918 moved from the old quarters in South William St. to 45th St. and Madison Ave. In December, 1926, Mr. Brown retired, and Mr. Meyer organized the present company to carry on the business with which he had been so long identified and in which he had helped much to improve trading methods and to standardize crude grades. The new concern became known as the Meyer & Brown Corp., with Mr. Meyer as president.

Mr. Meyer has a host of devoted friends, and many social, commercial, and cultural associations, but says that his interests are centered chiefly in the direction of the big importing concern bearing his name, and in the Rubber Trade Association and the New York Rubber Exchange, in both of which he is a leading and influential member.

Rhode Island

The United States Rubber Co. and the **Davol Rubber Co.** held a joint employes' outing on August 18 at Rocky Point on Narragansett Bay, more than 1,500 participating. Both concerns prepared programs of separate athletic games but featured a baseball game between teams representing the companies. When the final out was registered the Davol team was on the long end of a 10-1 decision. A Rhode Island shore dinner concluded the day's festivities, although many of the excursionists remained during the evening for dancing.

The 600 or more employes of the Davol Rubber Co. left the plant at noon and in special trolley cars, motor buses and private machines made the 14-mile ride to the pleasure resort in record time. It was the eleventh annual outing of the concern and luncheon was served as soon as the party had reached the grounds. Then followed the card of sports and games that had been arranged by the committee of which Lloyd Hanna was chairman; Lloyd Williams, transportation; Thomas Ryan, sports, and Frederick Goff, secretary. A number of the officials of the company were guests of the occasion.

A lengthy program of games featured the United States Rubber Co.'s outing in which there were numerous novelty events for both men and women. There were upward of 1,000 in the party and a number of the officials were present as guests. At the conclusion of the games prizes were presented to the winners of each by Arthur H. Carr, general factory manager. The merry party, each provided with every variety of noise producer imaginable, made the trip to the Point by special trolley cars and all had luncheon as soon as they reached the grounds. Because of the rivalry between the various departments there was considerable enthusiasm at the tugs-of-war and relay races, while the bathing beauty contest, the swimming events and the beach sports afforded a very enjoyable program. C. A. Fraser was chairman of the general committee.

Washburn Wire Co. and the **American Electrical Works** of East Providence, R. I., combined for the annual employes' outing on August 18, and journeyed over to Rehoboth, Mass., where, under the auspices of the Goodfellowship Club of these concerns, the outing and clambake was held on the Peleg Francis Farm, nearly 500 employes of the two firms attending. Among the officials present were: Thomas Wray, Jack C. Richardson, Oscar W. Lundgren and John E. Hayward of the Washburn Wire Co. and John B. Moss, J. Irving Waters, John R. McKean and Walter C. Ingerson of the American Electrical Works. Prizes were awarded to the winners of the various events by Manager Thomas Wray of the Washburn company, and Eugene B. Walker was chairman of the general committee.

Automobiles and motor buses left Phillipsdale at 9:30 o'clock, both plants being closed for the day and immediately upon arrival the sports committee took charge and began the long card of events. At noon a recess was called while a chowder luncheon was served, following which the athletic program was resumed. The feature of the day was the six inning baseball game between nines representing the two plants, which was won by the American Electrical team by a score of 8 to 5. The tug-of-war contest between teams from each concern was won by that of the Washburn company. Late in the afternoon the clambake was served and for an hour or more afterwards the party sat around and sang songs until dusk when everyone headed homeward.

The National India Rubber Co., Bristol, R. I., was host at a novel and especially interesting function when on August 16, some fifty retired employes of the concern were guests of honor at a luncheon in the new recreation room at the plant. The occasion served the double purpose of dedicating the new room and at the same time paying tribute to the veterans who have served the company faithfully during long periods of years. A number of the factory officials were present and extended personal greetings to the "old-timers." The gathering was welcomed by Factory Manager Maurice S. Smith, Jr., and following the luncheon the retired employes were taken on a tour of inspection of the plant. Many of the veteran workers made the trip to and from the plant in automobiles belonging to the company.

The National plant at Bristol was closed a part of the past month for the annual two-week vacation period during which there was a thorough inspection and renovation. The employes of several departments of the Keds Divisions resumed work on Friday, August 3, following a two-week shutdown. The following Monday the outsole cutting department resumed operations followed by the stitching and carton departments the next day when the production of finished shoes began. One day during the shutdown between 30 and 40 of the employes of the stitching department left by motor bus in the early morning for Nantasket Beach, where an all-day outing was enjoyed, returning to Bristol during the early evening.

Combination Ladder Co., Providence, R. I., has received an order from the Board of Fire Engineers of the Phenix Fire Department, which calls for 26 rubber coats and helmets and 300 feet of two and one-half inch three-ply standard fire hose.

Phillips-Baker Rubber Co., Providence, R. I., has awarded the contract for the erection of an additional building to its plant to be equipped with the latest machinery and appliances for a vulcanizing building of brick, steel and concrete construction, one story, 37 by 17 feet.

John T. Grahan, employed for 45 years by the American Wringer Co., Woonsocket, R. I., and its predecessor, the Bailey Wringer Co., resigned his position last month. In recognition of his long and faithful service and willingness to assist others, employes of the concern presented him with a gold watch and chain.

Joseph B. Driscoll has resigned from the Woonsocket Rubber Co. after 14 years' service to take a position as a railway mail clerk. Fellow employes of the packing department surprised him on his last day when they presented him with a traveling bag and other tokens of their esteem.

Frank Stone, 83 Ames St., Brockton, Mass., is proprietor of the National Tire Co., 42 Ash St., Providence, R. I.

Royal Tire Shop, 109½ Charles St., Providence, R. I., is owned and operated by Paul Riddell, of Cambridge Ave., Cloe Station, Warwick, R. I.

Jecklift truck and platforms utilized by Stedman Products Co., S. Braintree, Mass.

SEASONAL SALES OF DRUGGISTS' SUNdries, garden hose, plumbers' supplies, and miscellaneous rubber goods are reported by wholesale distributers in the Pacific Coast field as being well over the average for midsummer. A recent rise in oil prices has helped oil field rubber sales.

California Firestone Speeds Production

Firestone Tire & Rubber Co. of California is speeding up production at its new Los Angeles factory, as well as hastening the completion and equipping of the plant. While remarkable progress has been made with machinery installations, the output of casings has been limited by the late arrival of carriers and other equipment. However, the management is confident that production will be easily 2,000 casings and as many tubes by the middle of October. Capacity is being provided for 5,000 casings and at least 6,000 tubes daily; and 2,000 men will be required, as compared with 400 now at work. Contradicting some rumors, it is stated that the working force is entirely white and American, and the pay as high as that of any first class tire factory. The formal opening scheduled for the early part of September, will be deferred to about the first week of October.

The Firestone plant takes in 40 acres, has buildings with 360,000 square feet of floor space; has two boilers of 1,000 horse-power each, natural gas being the main fuel, but with an equipment to make an immediate change, if required, to fuel oil; it has a hydraulic pump with a pressure of 600 pounds to the square inch and a capacity of 400 gallons a minute; two air compressors, one with a capacity of 400 cubic feet a minute and one with 1,500 feet; an electric power station supplying three double-banked transformers of 3,000 KVA each; its own water supply from two wells, one yielding 800 and the other 1,000 gallons a minute and connected to three reservoirs with a respective capacity of 550,000, 1,257,000, and 1,090,000 gallons; five steel tanks outside the main buildings holding 12,000 gallons each of solvents; and an extensive system of sprinklers. A big cafeteria, shower baths, rest rooms, and a first aid room are among the many other features.

One of the most interesting departments, located on the second story, and in which ingenious precautions have been taken to lessen all hazards, is that used for the gum-dipping process in which the cord fabric is fed from rolls into a rubber-benzol solution and then drawn into a steel chamber filled with an inert gas (carbon dioxide, made in the power house) and in which the cement solvent is evaporated from the impregnated textile and recovered to the extent of 92 per cent. The factory will also produce none but curved tubes with a new method, and all beads will be formed in one instead of several operations as heretofore. The two smallest sizes of casings are being vulcanized with airbags, but all other sizes will be vulcanized with bags containing hot water under high pressure. In all operations the management is endeavoring to minimize waste and to make the productive efficiency of the plant unequaled by any tire factory in the world.

Pacific Coast

Goodyear Tire & Rubber Co. of California is exceptionally busy at its Los Angeles plant. July proved to be the best summer month in the company's history, and there was no indication of any let-up in August. Average production has kept well over 10,000 casings a day. With the factory taxed to capacity, the question of adding another large wing is to be soon given serious consideration. The demand for the new super tire is said to have exceeded all expectations. It is finally being made in all the standard sizes. The Goodyear company will have a notable display of rubber accessories for planes and ships at the national air races September 8 to 16 at the new Los Angeles 640-acre airport at Mines Field; and at the request of the Junior Chamber of Commerce will paint a 100-foot arrow on the roof of the Goodyear Textile Mills to guide aeronauts to the airport 8 miles distant. The company's cotton plantation superintendent, K. B. McMicken of Litchfield, Ariz., has been granted a 6 months' leave of absence to go to Peru to act as advisor to the Association of Peruvian Cotton Planters.

Dr. David Spence, chief chemist and vice president of the Intercontinental Rubber Co., of which George L. Carnahan is president, has returned from the company's rubber extraction works in Torreon, Mexico, and for the past couple of weeks has been studying conditions at the guayule experimental station of the subsidiary company, American Rubber Producers, Inc., Salinas, Calif. There he conferred with Manager J. Miller Williams, Dr. William B. McCallum, botanist in charge, and Vice President Frederick W. Taylor. Dr. Spence expressed much gratification with the progress being made in cultivating the rubber plant and with the plans being made for the extensive development of the new industry.

Griffith Rubber Mills, 519-523 N. 22nd St., Portland, Ore., has nothing to complain of, according to Assistant Manager U. A. Keppinger. The mills specialize largely in rubber-covered rolls and report they supply practically all the paper mills in the American northwest and in British Columbia. Although the factory is equipped to handle much more business than is now available, orders from several new paper mills now being built will soon have the factory working to its utmost capacity.

Plant Rubber & Asbestos Works, 537 Brannan St., San Francisco, Calif., manufacturer of rubber mechanicals, high pressure packings, pipe and boiler coverings, and dealer in hose and belting, according to Second Vice President Milton S. Sprague, is very busy and see in the extensive building program being carried out in the northern section of the San Francisco Bay region prospects of a considerable increase in sales of rubber goods to builders and general contractors.

Herbert A. Endries, rubber chemist, for a long while with the Celite Co., manufacturer of heat insulating material, Lompoc, Calif., has resigned and joined the research staff of The B. F. Goodrich Rubber Co., Akron, O.

Pacific Goodrich Rubber Co. is steadily stepping up production at its new plant in Los Angeles, daily output being over 3,000 tires and with a prospect of a considerable increase in the near future. Except as to some minor details, the factory is now in perfect running order. Latest additions to equipment have been chiefly molds, for which an eastern foundry has had a large order. Vice President and General Manager Samuel B. Robertson expresses much satisfaction with the progress accomplished. He and General Sales Manager Frank E. Titus with Treasurer E. S. Sargent were guests three weeks ago of Branch Manager F. S. Harkins in San Francisco; and there they inspected several sites offered for a new building for Goodrich offices and warehouse. The company is erecting a 2-story branch warehouse with 12,000 square feet of space and a railroad spur in Salt Lake City.

General Tire & Rubber Co., Akron, O., may not establish a separate Pacific Coast factory for some months, but it is making efforts to improve distribution of its products, according to Vice President W. E. Fouse, who returned to Akron two weeks ago after making an extensive survey of the Pacific Coast field. It is said that it may not be very long before sales expansion will amply warrant building the factory. Dan A. Kimball, western district manager, located at San Francisco, makes trips weekly to Los Angeles to look after southwest business. General Sales Manager Howard F. Smith, of Akron, has been visiting the Pacific Coast branches. A new office and warehouse is being built at 4th Ave. and Lenora, Seattle, Wash., where Phil Coffer has replaced T. W. Cramer as branch manager.

Ford Motor Co. announces that it has just closed an option on 40 acres adjoining Long Beach, Calif., and that instead of spending but $5,000,000 it will make an outlay of $10,000,000 in establishing what will be its chief subsidiary plant. Construction, delayed for many months, will now be rushed. At a cost of $200,000 a channel to the harbor has already been widened from 250 to 600 feet. Much interest in the enterprise is taken by makers of tires and all rubber accessories. The big automobile assembling plant will be within less than an hour's hauling distance from the Firestone, Samson, Goodyear and Goodrich tire factories in Los Angeles.

Samson Tire & Rubber Corp., Los Angeles, Calif., despite the general drop in tire prices, scored the greatest dollar and unit gain in sales in its history and during the past six months has gone well over the 30 per cent increase quota which it had set for its Pacific Coast sales territory. Vice President B. F. Schleicher recently returned from a trip through the eastern and middle states, where he did much to promote distribution of Samson products; and on a similar mission Sales Manager W. W. Drum has recently been visiting in the Northwest. The original plant at Compton, Calif., which has been repeatedly enlarged, is running three shifts a day, and the No. 2 plant at San Diego is now turning out over 1,300 tires a day. Many additions have lately been made to the sales force.

Inland Rubber Co., Chicago, Ill., has been scoring high in tire sales in the Southwest, according to President George P. Gilman, who has been making his annual visit in that section. He was the guest of Vice President C. P. Turner, who maintains headquarters in Los Angeles for the entire Pacific Coast distribution.

R. E. Hutchinson, rubber chemist, has been transferred from the Firestone Co. laboratory force in Akron to that of the new Firestone tire factory in Los Angeles, Calif.

Manhattan Rubber Mfg. Co., Passaic, N. J., has appointed as its southwestern sales manager Bernard Hargreaves, former sales manager for Electric Appliance Co., Chicago, Ill.

Willys-Overland Co. has started work on a big automobile assembling plant in the Laguna-Maywood district of Los Angeles, that will employ 800 men, have a capacity of 300 cars daily, and cost $1,000,000.

Ever Ready Rubber Products, 12th and Howard streets, San Francisco, Calif. which succeeded to the business of the C. Benedict Mfg. Co., recently enlarged its factory, and now has four times as much space as it had eight years ago. Recently it opened branches in Portland and Seattle, and planned for a considerable expansion of its sales in the Midwest and on the Atlantic Seaboard, as well as on the West Coast of South America. The concern makes a wide variety of articles of dress of sheet rubber, threaded and otherwise rubberized fabrics, and has lately added a novelty in rubber dresses for kitchen or other wear. M. E. Dorman is president and H. M. Hyman is secretary.

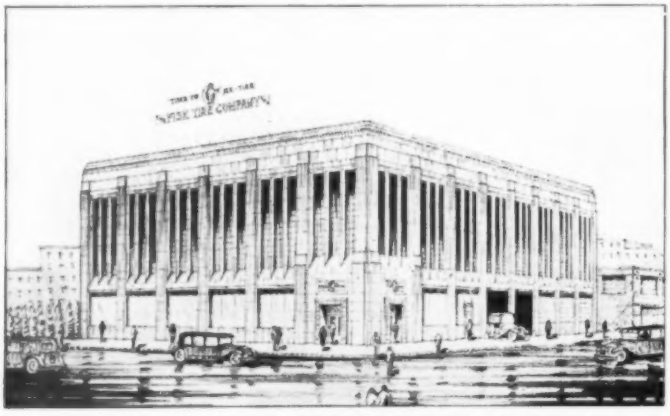
Rubber Stamps for Air Mail

Rubber stamps are used to stamp mail over air routes, the designs for each new route being changed by the Post Office Department, in the interests of philately and for advertising purposes.

New Fisk Headquarters

The Fisk Tire Co., Inc., will serve all far western dealers from a new steel and cement 3-story building being erected at 35th and Hope streets, Los Angeles, Calif., and to be completed November 1. Floor space will be 50,160 square feet. Southern Pacific tracks lead to the property. The local branch office, now at 1328 Santa Fe Ave., will be on the first floor, the Pacific Coast offices on the second, and the remainder of the building will be used chiefly for storing over $500,000 worth of tires and tubes.

Instead of dealing directly with the factory in Chicopee Falls, Mass., the branches in California, Oregon, Washington, Arizona, Nevada, Idaho, Wyoming, Montana, Utah, Colorado, South Dakota, and part of Nebraska will hereafter report to the Los Angeles headquarters, according to C. C. Fletcher, general manager of the Pacific Coast division organized last March, and who, with W. G. Renter, supervisor of branches, worked out the new expansion program.



Los Angeles Headquarters, Fisk Tire Co.

To Market Shale Rubber

Delaware Shale-Rubber Products Co., which was organized May 4 last to manufacture a rubber-like material from shale, has established its main office at 1007 Subway Terminal Building, Los Angeles, Calif., and selected these officers: President, King C. Gillette; first vice president, Monte L. Cambran; second vice president, Augustus R. Lendner; treasurer, Herman O. Langstaff; and secretary, T. H. Rosenberger. All are residents of California, the president being the well-known razor manufacturer. The company has an authorized capital of 100,000 no par shares, and is permitted to issue 40,000 shares for patents obtained by Mr. Lendner, chemist, of Perris, Riverside county, on a process for the production of a gummy substance which, it is claimed, can be used up to 61 per cent in a rubber compound such as tread stock, effecting much economy. Options have been taken on large tracts of oil-bearing shale lands near Perris, and later the company's operations may be carried on in other sections where suitable bituminous material may be obtained on a large scale from shale deposits. The process chiefly involves the treating of the heavy hydrocarbon fluid with vegetable matter at a high temperature. Mr. Lendner has been a chemist for over half a century, his early life being spent in Washington. His grandfather was a Philadelphia chemist, and his great-grandfather a chemist in Paris.

Rubbermen's Golf Tourney

Pacific Coast Mechanical Rubbermen's Golf Association will have its annual tournament on a peninsula golf course adjoining San Francisco, Calif., instead of at Del Monte as first proposed, during the first week of October. Many of the members from the upper and lower sections of the Pacific Coast expect to combine business with pleasure, and a large attendance is said to be assured. The trophies for 1928, it is said, will be the finest yet procured. Milton S. Sprague, vice president of the Plant Rubber & Asbestos Works, San Francisco, is president, and G. C. Spokesfield, of the sales department, Pioneer Rubber Mills, in the same city, is secretary and treasurer. The vice presidents are W. A. Corder, J. B. Lippincott, William Edris, and Howard Middleton.

North Carolina Aids Rubber Quest

In response to a request from Thomas Edison for information as to plants in western North Carolina capable of producing rubber, the Asheville Chamber of Commerce has announced a large number of replies. The plants in which Mr. Edison is particularly interested are the natal plum, cape jasmine, Neor's crown, or East India rosebay, the allamanda and the flame vine. Specimens will be forwarded to the famous inventor at his Orange home.

Canada

The fall placing of rubbers is now completed and according to reports the business has been bigger than last year. Larger orders in the fishing sections are particularly noticeable this year. Nothing has been heard of price reduction in rubber footwear, although price of tires and tubes has declined from 5 to 20 per cent. All Canadian tire manufacturers are exceedingly busy and are advertising freely that their particular tire is the best buy for the money.

W. H. Miner, president, Miner Rubber Co., Ltd., Granby, Que., is one of the officers of the newly formed Granby Aero Club, Inc., of that town.

Goodyear Tire & Rubber Co. of Canada, Ltd. (Montreal Branch), reports having received frequent requests for airplane tires and other aviation rubber goods and in this connection are giving a practical service in Montreal.

W. F. Bilger, director of advertising and promotion manager, Dominion Rubber Co., Ltd., Montreal, Que., has returned from a well earned vacation with a coat of tan and renewed energy for the busy season's activities ahead.

The Granby Elastic Web, Ltd., Granby, Que., has under way a three-story continuation of the present building, 95 by 60 feet, with a two-story wing, 60 feet square and costing about $45,000. The addition will be used for new looms and braiders and partly to relieve congestion in the present factory. Fifty more hands will be employed increasing production by about 25 per cent.

Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, recently held its 25th annual picnic at Port Dalhousie, Ont., where twelve hundred employes from office and factory assembled for a day's outing.

E. C. Climie has been appointed manager of the Regina, Sask., branch of the Columbus Rubber Co. (Montreal), Ltd.

J. H. Cote recently received the appointment as manager of the Ottawa, Ont., branch of the Columbus Rubber Co. (Montreal), Ltd.

The Woodstock Rubber Co., Ltd., Woodstock, Ont., is producing 1,000 pairs of rubber footwear a day. It plans to be ready with a complete line of tennis samples for 1929. This firm is operating a branch at 343 Lisgar St., Ottawa, Ont., with Ed Zavitz as manager.

Dominion Rubber Co., Ltd., Montreal, features the Royal Master tire in the leading dailies throughout Canada which it designates as "The Greatest Tire of All." Quoting a recent advertisement: "Not one Royal Master in a thousand will ever puncture. Not one in five thousand will blow out under two years of service.

Quesnel & Frere, 754 Notre Dame St., West Montreal, Que., are representatives in Montreal for the Woodstock Rubber Co., Ltd., Woodstock, Ont.

P. E. Brien, Columbus Rubber Co. (Montreal), Ltd., was recently elected secretary-treasurer of the Quebec Division of the Shoe and Leather Travelers' Association.

The Canadian National Exhibition will take place in Toronto, Ont. from August 24 to September 8, when the leading rubber manufacturers will as in the past have exhibits comprising tires, mechanical goods, rubber footwear, etc.

Northern Rubber Co., Ltd., Guelph, Ont., plans to build a factory costing about $50,000. It will be a two-story and basement structure of steel and brick construction measuring 60 by 120 feet.

J. E. Stephenson, British Columbia manager with headquarters at Vancouver, of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., states that his company is doing a phenomenal business. The demand for tires all over Canada and in the Antipodes is being illustrated by the heavy exports of these goods from Vancouver.

The Rubber Association of Canada has moved its offices from The Reford Bldg. to The Harbor Administration Bldg., Bay and Fleet streets, Toronto, Ont.

J. S. Lovell, who travels in Western Ontario for the Kaufman Rubber Co., Ltd., Kitchener, Ont., is on a three months' vacation in England and Ireland.

The Rubber Growers' Association, Inc., 2, 3, and 4 Idol Lane, Eastcheap. London, E. C. 3, is this year exhibiting at the Canadian National Exhibition, Toronto, Ont., August 24 to September 8. By means of this display "Britain intends the world to think in terms of rubber," said H. E. M. Fox of the Rubber Growers' Association. The R. G. A. will cover the whole floor of the British Section, which amounts to over 1,000 square yards, with a new kind of rubber flooring, Mr. Fox stated. He further mentioned that an influential delegation was coming to Canada headed by Sir George Maxwell, late Chief Secretary of Malaya, in order to study the rubber question and to advance its use throughout the Dominion. "Make no mistake," concluded Mr. Fox, "we are going to show the whole world new methods, new ideas, new inventions and new means by which the rubber industry will advance not only to its own advantage, but to the advantage of the individual consumer."

Gregory Tire & Rubber (1926), Ltd., Port Coquitlam, B. C., plant is operating three shifts daily to meet with the demand for tires.

American Tires in South Africa

According to *Commerce Reports,* £213,427 worth of American tires found a market in South Africa in 1927 compared with £207,172 worth of British and £282,959 worth of Canadian casings. The smaller sellers were: France £44,666, Italy £37,631, and Germany £174. The United States led all others in supplying mechanical rubber goods.

Obituary

Hard Rubber Expert Passes Away

G. E. Trumbour

The death of George Edward Trumbour removes one of the pioneers in the rubber industry, continuously employed in the hard rubber business since 1878 with the Butler Hard Rubber Co. and its successor, the American Hard Rubber Co.

Fidelity and efficiency led to his promotion from time to time until, at his retirement in 1922, he was chief assistant to William Kiel in the gum and molding department. Several inventions and processes discovered by him, most important of which was the development and perfection of vulcanizing hard rubber in gas presses, are in general use throughout the world.

Mr. Trumbour was born in Boonton, N. J., August 17, 1855. He is survived by two sons, George W. Trumbour, of Boston, Mass., and Thomas A. Trumbour, of Hawthorne, N. J., and two daughters, Mrs. Margaret Riley and Mrs. Eulalia Dwyer, of Butler, N. J.

Legal

Adverse Decisions in Interference

BLADDERS. Pat. No. 1,620,245, A. W. Turner, device for closing the air bladders of sport balls of any kind, decided June 4, 1928, claims 1 to 7, inclusive. *Official Gazette*, Vol. 372, p. 761.

Adjudicated Patents

TIRE FLAP. (C. C. A. Wis.) Walten patent, No. 1,612,788, for improved tire flap, held not so clearly wanting in invention as to authorize determination of invalidity without hearing. C. O. Tingley & Co. v. Badger Rubber Works, 26 F. (2d) 159. *Official Gazette*, Vol. 372, p. 768.

Patent Suits

TIRE. 1,092,078, M. C. Overman, vehicle tire, filed June 12, 1928, D. C., S. D. N. Y., Doc. E 45/290, Overman Cushion Tire Co., Inc., v. The B. F. Goodrich Co. *Official Gazette*, Vol. 372, p. 1016.

FLAP. 1,612,788, J. Walten, tire flap, C. C. A., 7th Cir., Doc. 4005, C. O. Tingley & Co., et al. v. Badger Rubber Works. Reversed and remanded to district court May 24, 1928. *Official Gazette*, Vol. 372, p. 1016.

Treasury Decisions

BALLS. Suit 3126. Rubber Balls—Toys.—United States v. F. Woolworth & Co. Colored rubber balls from 2½ to 3 inches in diameter, classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, were held dutiable as balls at 30 per cent under paragraph 1402. Appeal from Abstract 6133. *Treasury Decision*, Vol. 54, p. 15.

BLADDERS. No. 6501. Protest 92329-G of Bullocks (Los Angeles).—Bladders—Rubber Balls.—The appraiser reports that the merchandise, which was invoiced as bladders, is deflated rubber balls to be used on the inside of a leather case to make a football. It was classified at 30 per cent ad valorem under paragraph 1402, tariff act of 1922, and is claimed dutiable at 25 per cent under paragraph 1439. Opinion by J. McClelland. In accordance with stipulation of counsel and on the authority of Abstract 47,781 the bladders in question were held dutiable at 25 per cent under paragraph 1439 as claimed. *Treasury Decisions*, Vol. 54, p. 37.

Guanidine Patent Suit

Scott v. Weiss and Heuser. Weiss v. Scott and Heuser. Appeal from the Patent Office before Chief Justice Martin, Justice Van Orsdel and Judge Smith, Court of Appeals of the District of Columbia. Opinion by Judge Smith.

This is a consolidated appeal from decisions awarding priority of invention to Ralph V. Heuser in three party Interference No. 47,394 and three party Interference No. 49,357.

Morris L. Weiss in his preliminary statement alleges that he conceived and disclosed his invention on or about Feb. 1, 1919; that he made his first written description of his invention on Oct. 15, 1920, and reduced it to practice on or about Dec. 15, 1920. Weiss filed his application for a patent on Aug. 8, 1921.

Ralph V. Heuser's preliminary statement alleges that he conceived and disclosed his invention on June 16, 1920, and that he reduced it to practice on July 15, 1920. Heuser's application for a patent on the subject matter of Interference No. 47,394 was filed on Jan. 27, 1921.

Scott in his preliminary statement declares that he conceived the invention on Sept. 20, 1920, and disclosed it in October, 1920; that his invention was first described in writing and reduced to practice by him on March 15, 1921. Scott filed his application for a patent on June 20, 1922.

The invention involved in both interferences is a process for vulcanizing rubber by adding to heated crude rubber, sulphur and other materials an orthotolylguanidine vulcanization accelerator, thereby increasing the elasticity and quality of the rubber.

The decision of the Commissioner of Patents, in so far as it awards priority of invention to Ralph V. Heuser on counts 1, 2, and 3 of Interference 47,394 and counts 1, 3 and 5 of Interference 49,357 is affirmed. The decision of the Commissioner of Patents in so far as it awards priority of invention to Ralph V. Heuser as to counts 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16 of Interference 49,357 is reversed and priority as to said last-named counts is awarded to Winfield Scott. Affirmed as to Interference No. 47,394 and modified as to Interference No. 49,357. *Official Gazette*, Vol. 373, p. 3.

Rims Approved by Tire and Rim Association

	July, 1928		7 Months, 1928	
Rim Size	Number	Per Cent	Number	Per Cent
Motorcycle				
24 x 3	1,391	0.1	22,562	0.1
26 x 3	4,008	0.2	31,396	0.2
28 x 3	.....	...	753	0.0
Clinchers				
30 x 3½	90,403	4.1	338,934	2.2
31 x 4	424	0.0	2,392	0.0
18" Balloons				
18 x 3½	.....	...	9,362	0.1
18 x 4	111,778	5.1	800,818	5.3
18 x 3.25	13,265	0.6	53,003	0.3
18 x 4½	7,632	0.3	85,931	0.6
18 x 5	3,699	0.2	3,777	0.0
19" Balloons				
19 x 2.75	11,080	0.5	17,433	0.2
19 x 3½	104,615	4.7	1,274,394	8.4
19 x 4	264,014	12.0	1,454,388	9.6
19 x 3.25	878	0.0	5,619	0.0
19 x 4½	57,587	2.6	627,540	4.1
19 x 5	13,768	0.6	21,271	0.1
20" Balloons				
20 x 2.75	72,867	3.3	105,027	0.7
20 x 3½	20,805	0.9	355,035	2.3
20 x 4	321,396	14.9	2,253,228	15.2
20 x 4½	86,440	3.9	284,339	1.9
20 x 5	144,636	6.5	498,168	3.3
20 x 6	7,764	0.4	72,220	0.5
21" Balloons				
21 x 2.75	463,844	21.5	3,821,306	25.2
21 x 3½	108,763	4.9	549,859	3.6
21 x 4	26,378	1.2	431,375	2.8
21 x 4½	19,057	0.9	254,032	1.7
21 x 5	.....	...	7,240	0.0
21 x 6	1,518	0.1	4,233	0.0
22" Balloons				
22 x 3½	266	0.0	1,775	0.0
22 x 4	597	0.0	2,162	0.0
22 x 4½	.....	...	1,450	0.0
High Pressure				
30 x 3½-23	4,541	0.2	34,878	0.2
31 x 4-23	.....	...	640	0.0
32 x 4½-23	3,494	0.2	50,229	0.3
32 x 4-24	11,525	0.5	51,645	0.3
33 x 4½-24	.....	...	406	0.0
32 x 3½-25	.....	...	.....	...
33 x 4-25	357	0.0	2,198	0.0
34 x 4½-25	801	0.0	5,132	0.0
20" Truck				
30 x 5	143,782	6.5	1,134,836	7.5
32 x 6	43,828	2.0	265,078	1.8
34 x 7	11,620	0.5	73,984	0.5
36 x 8	11,069	0.5	43,959	0.3
40 x 10	941	0.0	3,927	0.0
22" Truck				
36 x 7	1,200	0.1	8,987	0.1
38 x 8	.....	...	200	0.0
24" Truck				
34 x 5	1,775	0.1	14,487	0.1
36 x 6	7,727	0.4	31,466	0.2
38 x 7	3,040	0.1	36,999	0.2
40 x 8	3,722	0.2	21,627	0.1
44 x 10	.....	...	796	0.0
Airplane				
8 x 3 SS	21	0.0	21	0.0
12 x 3 SS	2	0.0	21	0.0
18 x 3 SS	36	0.0	92	0.0
20 x 3 SS	6	0.0	6	0.0
20 x 3½ SS	38	0.0	1,409	0.0
20 x 4 SS	48	0.0	586	0.0
21 x 4 SS	.....	...	21	0.0
20 x 5 SS	16	0.0	68	0.0
20 x 6 SS	26	0.0	2,291	0.0
24 x 10 SS	53	0.0	53	0.0
18 x 4 Cl	1,151	0.1	6,667	0.0
Total	2,209,692	...	15,183,731	...

ACCORDING TO COMMERCE REPORTS, THERE WERE 27,594,209 AUTOMOBILES in universal use as of Jan. 1, 1927. During the year this total increased to 29,687,499.

The Rubber Industry in Europe

Great Britain

Effect of Tariff on Tire Imports and Exports

It is now well over a year since the tire tariff came into operation and a duty of 33 1/3 per cent was imposed on all imported tires, and those interested, naturally ask themselves the question as to what has been attained by tire protection in England. First, we all know that as a direct result of the tariff some half dozen foreign companies established themselves in England, giving employment to several thousand British workmen, and, of course, there was the expected heavy reduction in the imports of foreign tires. But figures for the first four months of the last three years show that besides the drop in imports there was almost as serious a decrease in exports of tires as will be seen from the table below:

	January 1—April 30		
	1926	1927	1928
Imports of tires	£2,054,349	£1,969,358	£348,384
Exports of British tires.	1,483,459	1,516,607	948,179
Reexports of imported tires.	146,629	296,552	64,027
Total trade in tires....	£3,684,437	£3,782,517	£1,360,590

The question that some business men are asking is, does this considerable decrease in British tire trade, amounting to £2,421,-927 as compared with 1927, and a loss of over £800,000 when exports of British tires and reexports are considered, weigh up against whatever benefits accrue from the decrease of imports and the establishment of new factories here. Although there is an admittedly heavy decrease in exports the reduction of imports being more than double the loss of exports puts the British manufacturer on the right side of the balance, for the cut in imports connotes more home consumption of home production, and more British workmen employed in the tire industry. And then there are the six new factories. The argument would have been irrefutable if the new firms had been British, but they are not. In fact, they are simply six of England's most powerful competitors who formerly shipped goods to England from their own respective countries but have now come to England to retain their hold on the English market in spite of the tariff. So that actually, the net gain due to the tariff is an increase of employment in the tire industry in England.

The carping critic, however, goes still further and points out that with the loss of incoming and outgoing trade at the ports there must of necessity have been a loss of employment, so that in the end there has been a mere shifting of employment, from one place to another and no real increase in employment.

Reliance Rubber Shops

While shops devoted exclusively to the sale of rubber goods have been known in Germany for a long time, the first stores of the kind have only recently been opened in London. The Reliance Rubberware, Ltd., the new company which was recently promoted by Fordyce Jones to take over the old-established business of the Reliance Rubber Co., Ltd., has opened two new rubber shops in London, one at 131-133 High Road, Kilburn, N. W., and the other at 265-7 Oxford St. Other retail branches will be opened at Clapham Junction and Balham, and negotiations are under way for the acquisition of premises in Kensington, Ilford, Chiswick and other districts. The company hopes to have its retail program fully developed by the end of the fall season. The stores already opened make an attractive appearance and should realize the company's aim to popularize rubber goods of all kinds in England. It is hoped that the example of the Reliance company will soon be followed by other important manufacturers.

Rubber Footwear Advertising Campaign

It will be remembered that last year rubber footwear manufacturers in cooperation with the Rubber Growers' Association, Inc., devoted £10,000 to advertising rubber Wellingtons as the ideal footwear for the winter. This advertising campaign gave such satisfactory results that it has been decided to spend another £10,000 this year in order to consolidate the position in the expectation that the cumulative effect of the two campaigns will make the coming winter a rubber Wellington season. It is planned to make the new Wellingtons smarter than ever.

Rubber Fair

A rubber fair is to be held in the New Horticultural Hall, Westminster, during the week December 4-8, inclusive. Although the hall is large, the number of sites is limited to avoid all appearance of overcrowding. The hall is especially adapted to its purpose and there is not a single unfavorable position. The exhibition is to be devoted to the display of manufactured rubber goods showing the wonderful adaptability of rubber to almost all phases of daily life. Incidentally, a good deal of disappointment, not to say resentment, has been caused by the refusal of the Institution of the Rubber Industry to give the fair its moral support. The Institution takes the stand that this is a trade matter that does not come within the scope of the association.

Training for the Rubber Trade

The Manchester Education Committee proposes to provide a workshop for rubber manufacture at the new technical school at Newton Heath, Manchester, at a cost of £3,000. Last January the first selection of twenty boys entered upon a course of instruction which is a full-time course covering two years, supplemented by a part time course, also for two years, when they have entered the industry. The boys selected are fourteen years of age and their prospective employers are given the fullest opportunities of watching them during their period of training and of cooperating with the school authorities.

The India Tire and Rubber Company

Interesting facts regarding the India Tire & Rubber Co. established in England, have been published in a recent issue of the *Rubber Age* of London. The products being turned out are: Superduty low, medium and high pressure tires for passenger vehicles; heavy service high pressure tires for commercial vehicles, and blue tubes. The initial output will be 500 covers and tubes per day, increasing to 2,000 of each as soon as the necessary additional plant is installed. The factory accommodation is already sufficient for this additional output. Installation of equipment in the tube department has been delayed until tests on the full molded type of tube have been completed. It seems that this type of tube has been proved to be superior to the open cure tube in every way. The necessary equipment has been ordered and blue heat-proof quality tubes will be produced within a few weeks.

A chain of distributers has been established throughout England and Wales who are selling India tires as their super-grade line, some of the distributers devoting themselves exclusively to the sale of India products.

British Notes

The Goodyear Tire & Rubber Co.'s factory at Rushbury, Wolverhampton, is operating on a system of three eight-hour shifts since the beginning of April, and is now turning out 2,300 tires and tubes per day. The factory gives full-time employment to a total of 1,300 men and girls.

G. W. West (Weatherproofs), Ltd., has acquired the controlling interest in J. Weinberg & Sons, Ltd., Aquarock Works, North St., Cheetham, Manchester. This is one of the largest and most up-to-date works in England and gives employment to nearly 1,000 people. The products are high class waterproofs and raincoats, and the concern has a connection and reputation of over 30 years' standing. The chairman of G. W. West visited the United States and Canada last year, and as a result a large number of stores in both countries are now stocking the firm's brands

of waterproofs, including the Telemac brand.

Chas. Macintosh & Co., Ltd., will market a great variety of industrial and other rubber good under its new trade mark Macinlop. The new name aptly points the fusion of interests between the Macintosh company and the Dunlop Rubber Co., Ltd. The tire and flag crest used by Dunlop will appear on the business paper of Macinlop, Ltd., alongside the famous Cock Brand trade mark of Chas. Macintosh & Co., Ltd.

Sweden

The following tabulation gives in detail Sweden's imports and exports of crude and manufactured rubber goods for 1927.

IMPORTS AND EXPORTS 1927

	Quantity, Kilos	Value, Kronor
Imports		
Crude rubber	2,202,391	7,084,439
Rubber solution or dough	43,455	106,377
Manufactured rubber		
Rubber thread	17,879	192,388
Rubberized fabric	39,220	101,972
Other mechanical goods	121,176	470,551
Sheet combined with asbestos	69,091	200,364
Buffers, rubber heels and soles	307,069	1,320,397
Solid tires	59,669	217,188
Matting	29,040	66,792
Hose	46,040	152,507
Belting	259,974	1,461,153
Inner tubes	274,663	1,343,936
Footwear	202,600	1,023,999
Cycle tires	463,383	2,316,915
Pneumatic tires	1,596,761	7,983,805
Hard rubber goods	12,189	78,060
Exports		
Crude rubber, gutta percha, etc.	8,000	25,506
Solution or dough	68,156	122,438
Manufactures		
Rubber cloth	1,217	4,761
Packing	3,483	35,682
Buffers, heels and soles	38,790	204,971
Solid tires	13,948	57,554
Hose	4,929	31,300
Belting	28,678	133,965
Footwear	756,289	5,129,294
Cycle tires	1,129	8,404
Pneumatic tires	5,569	40,099
Hard rubber goods	110,486	457,227

Regulation of Dutch Rubber Planned

In fulfillment of his promise to a deputation of the Society for Safeguarding Dutch Interests in Rubber, the Minister of the Colonies, Mr. Koningsberger, has written to the Governor-General of the Netherlands East Indies emphasizing the great importance of including native rubber in any eventual action for the regulation of production.

The Dutch government has asked the East Indian government to consider what measures would be possible on the part of the government to include private planters in its action, declaring that it would be very desirable if these planters agreed upon the importance of a fixed price for rubber and formed a voluntary organization under the support of the government.

If private planters should not agree to the organization, the minister wishes to be informed of other possible safeguarding measures, as for instance restriction in the production of rubber, a temporary increase in export duties on rubber, or control of production by the Netherlands East Indies government.

Germany

Pneumatic Tires on Railway Carriages

Recently tests have been carried out in Burgwedel, near Hannover, with rocket carriages on rails. One of the two chassis shown had iron tires, but the second, introduced by Fritz von Opel and the engineer Sander, had ordinary pneumatic tires such as are used with the small Hanomag cars. On the inside of the fellies, and reaching beyond the profile of the rubber tires, large circular metal disks have been arranged which are intended to keep to the track and to prevent a derailment of the carriage. Fritz von Opel believes that the rubber tires make it possible to utilize more fully the sliding possibilities afforded by the smooth rails and to intensify braking-action while at the same time a greater speed is attained. He and Sander are of the opinion that the elasticity of the rubber tires has real advantages over the iron tires as far as speed is concerned. The rubber-tired carriage was not given a trial run at Burgwedel but since the second trip of the iron-tired carriage ended in failure it is planned shortly to make a new and secret trial when the rubber tires will also be tried out.

Both the German and foreign tire industry, von Opel thinks, should be interested in determining to what maximum speeds it is possible to travel on rubber tires. The result of such tests should indicate whether present shapes and profiles of rubber tires are favorable or should be modified in any way. It is also important to decide how the highest initial speeds react on rubber tires. There is undoubtedly a danger, he considers, that at speeds of 600-700 kilometers the rubber tires are simply worn away. Then how could this be prevented? Finally, the question is put forward whether there is a suitable brake band able to withstand the pressure and the power of rocket braking.

Toilet Accessories

In a recent issue of *Gummi-Zeitung* it is stated that there is not only a demand for toilet accessories of rubber or rubberized materials in foreign countries, particularly in the Orient and Eastern Asia, but that these are also on the market. Thus, in Japan it seems that a popular item is a lady's bag of the shape and size of a brief case, made of leather, which when opened shows four compartments that open up accordion fashion. The compartments hold a collapsible wash basin of rubberized material, a soap-container of similar material, a mirror with rubberized cover. This equipment is said to be especially useful when traveling in the Orient as it is often rather a risky business to use the wash basins, etc., provided in local hotels.

Pneumatic Bus Tires

For more than a year, Berlin has had several double-decked buses with six wheels equipped with low-pressure pneumatic tires. These cars have given satisfaction and consequently 100 more of the same type are now being constructed. Another new type of bus in Berlin has front wheel drive, and is equipped with single medium pressure tires of 44 by 12 inches. The use of single tires also on the rear axle of these cars is particularly interesting as they are also double-deck cars and seat 63 persons, that is 8 more than the usual bus with 2 axles. Tests with the bus in question show that it moves comparatively quietly on all kinds of roads.

Jar Rings Packed in Liquid

A firm dealing in technical goods writes to the *Gummi-Zeitung* that during a recent hot spell a shipment of several thousand jar rings was received packed in a porcelain container filled with some fluid, which again was packed in a wooden box. It seems that this was an experiment with a special kind of packing intended for the shipment of extra sensitive goods in hot weather. The fluid in question consisted of two parts of water to one part of glycerine in which mixture three per cent of borax had been included. The containers were equipped with air-tight covers. The receiving firm states that the goods arrived in perfect condition, were very elastic and did not tear. The method may work for shipments to tropical countries, but the question of packing seems to be rather a serious one.

Rubber Statistics

Exports of rubber goods from Germany in June, 1928, came to 15,387 quintals, value 9,572,000 marks, against 13,717 quintals, value 8,322,900, in June of the previous year. For the first half of 1928 the exports were 90,859 quintals, value 57,763,000 marks, against 81,997 quintals, value 49,579,000 marks. Imports in June, 1928, were 3,695 quintals against 5,325 quintals, and for the half year, the figures were 34,019 against 25,793 quintals.

A Pioneer German Rubber Company

The firm of Josef Reithoffer's Söhne A-G, was founded in 1832 and is, therefore, to be counted among the pioneer rubber manufacturers of the world. The factories, which are situated in Garsten bei Steyr, Austria, produce a variety of rubber goods including automobile tires, cycle tires, solid and elastic tires for trucks, molded goods of all kinds, heels and soles, proofed goods; raincoats and insulated wires and cables.

The Rubber Industry in the Far East

Malaya

Rubber Census

The Rubber Growers' Association suggested to the Malayan Government that at the end of June and of each subsequent month a census should be taken of prepared rubber on estates over 100 acres and in the hands of dealers in the restriction area, rubber in course of manufacture not to be included.

The following figures of stocks in the restriction area at June 30 have now become available:

STOCKS ON ESTATES OVER 100 ACRES

	Tons.
Federated Malay States	28,290
Straits Settlements	4,995
Johore	8,358
Kedah	2,849
Kelantan	299
Trengganu (figures not available	....
Total	44,791

DEALERS' STOCKS

	Tons.
Federated Malay States	10,371
Straits Settlements	1,958
Johore	945
Kedah	140
Kelantan	122
Total	13,536
Grand total	58,327

These figures include the normal working stocks of dealers and on estates which are estimated to amount to about 25,000 tons.

The Malayan Government has been asked that the monthly census of such stocks should be taken until at least June, 1929, particularly in view of the circular issued by the association recommending companies to spread over a period of six months, shipments of unexportable stocks on hand at October 31, 1928.

Rubber Insurance

Reports of the various remedies suggested for the rubber industry by rubber men in Europe have probably stimulated local invention anew. Recently, a scheme has been evolved locally for the formation of a rubber insurance bank for which no capital would be required. The scheme presupposes the cooperation of Malaya, the Dutch Colonies and Indo-China.

With the authority and assistance of the various governments, the bank would impose a duty of three pence per pound on all rubber exported. From the sum thus collected the bank would meet government demands for the payment of duty at the prevailing rate, the exporter having the choice of meeting his obligations towards the bank in cash or by a deposit of rubber at a fixed valuation of one shilling per pound.

All the duty so paid, whether in cash or kind, would be placed to the credit of the payers, who would thus become shareholders in the organization. The latter would be run solely for the benefit of the industry, and would be free from any suspicion of private gain.

Exports and Unused Credits

According to official information from Kuala Lumpur, the quantity of rubber from the Malayan restriction area on which the minimum rate of export duty was paid during June, 1928, was:

	June, 1928 Tons.	June, 1927 Tons.
Federated Malay States	6,445	9,543
Straits Settlements	1,328	2,218
Johore	3,539	3,436
Kedah	1,053	1,338
Kelantan	469	339
Trengganu	101	171
Total	12,935	17,045

The official estimate of the balance of unutilized exports carried forward to July is:

	Tons.
Federated Malay States	14,165
Straits Settlements	3,665
Johore	4,171
Kedah	1,354
Kelantan	995
Trengganu (not available)	....
Total	24,350

Credits issued in June were as follows:

	Tons.
Federated Malay States	1,188
Straits Settlements	254
Johore	678
Kedah	210
Kelantan	100
Trengganu (not available)	....
Total	2,430

Incidentally, it is worth observing that imports of rubber from countries outside of Malaya have recently taken an upward turn. In June, 1928, the figure was 16,168 tons (including over 13,000 tons of wet rubber) against 14,706 tons in June, 1927. Have the native growers in the Dutch Colonies decided to make the best of the low prices prevailing, or do the figures merely indicate that smuggling from Malaya is more active than ever?

Enterprise of Tan Kah Kee

There is probably no Chinese so well known in Malaya as Tan Kah Kee. It is frequently recorded in the local papers that Tan Kah Kee has established a certain enterprise at a given place, and much curiosity is aroused concerning this man and his various undertakings. A writer in the *Malayan Tin and Rubber Journal* states that Tan Kah Kee, who is now in his early fifties, came to this Colony as a boy, but speaks no English and little Malay. He has never visited the western continents and in his personal life and outlook he is as unchanged—as completely Chinese—as when he left his South China fishing village many years ago.

Tan Kah Kee has a retail organization spreading through China, the Philippines, Indo-China, Malaya, the Dutch East Indies, Siam and Burma. He has a group of factories in Singapore, which with working, capital, land and equipment represent an investment of some $9,000,000. There are besides pineapple estates and factories, 10,000 acres of planted rubber and large rubber mills, an influential Chinese vernacular newspaper, an extensive rice business, a biscuit factory, a tannery, a hat factory and also a soap factory.

In the Singapore factories are produced tires, the daily output being less than 100 tires, the majority being for bicycles and rickshaws. Rubber footwear is another item; the daily output of tennis shoes is said to be between 15,000 and 20,000 pairs.

Tan Kah Kee has a raincoat factory and a rubber reclaiming plant. He manufactures toys and confectionery and also has a pharmaceutical department. His son-in-law, Oon Khye Hong, who was educated in America and spent several years in an American rubber factory, has charge of the chemical laboratories. Tan Kah Kee gives employment to 3,000 in these factories, and for all his undertakings the total number is something like 15,000 people.

Ceylon

In his report for 1927, the rubber controller for Ceylon gives important figures to show that the number of estates again increased during the year, which was reflected in increased acreages, particularly in the case of the small holdings, as the following tables show:

NUMBER OF ESTATES

	1924-25	1925-26	1926-27
Over ten acres	4,325	4,536	4,840
Under ten acres	25,340	33,355	34,637
Total	29,665	37,891	39,477

ACREAGE

	1924-25 Acres.	1925-26 Acres.	1926-27 Acres.
Over ten acres	418,808	425,904	433,662
Under ten acres	48,522	59,790	65,000
Total	467,330	485,694	498,662

These figures show that even with a restricted output the prices were sufficiently high to induce further planting, especially on small holdings. On estates under 10 acres the first five acres are normally assessed at 320 pounds per acre plus an additional 33⅓ per cent, or 426 pounds per acre. At 60 per cent, the exportable maximum allowed becomes 255 pounds per acre, so that at the prices that have prevailed the small holder undoubtedly benefited.

Standard Production

The figures for standard production during the same years were:

	1924-25 Tons.	1925-26 Tons.	1926-27 Tons.
Over ten acres	58,979	62,406	64,245
Under ten acres	6,828	8,069	9,594
Total	65,807	70,475	73,839

Replying to the criticism of the assess-

ment of standard production the controller endorses the view of the Rubber Restriction Board that no method of reassessment based on the normal true productivity of the estates would give a lower figure for Ceylon. The correct interpretation of the accumulation of certificates during 1926 is that under the system of assessment based on normal true productivity, some time must elapse before the rubber areas can respond to a 100 per cent release.

Export Duty Reduced

The Legislation Council, by 24 to 14 votes, reduced the rubber export duty to 1¼ cents, plus ¼ cent restriction cess and ¾ cent medical rents, making a total of 2¼ cents per pound.

It seems that a misconception has arisen with regard to the Ceylon export duties. The official motion did not deal with the restriction cess of ¼ cent, consequently the lump duty is now 2½ cents per pound, which will automatically be reduced to 2¼ cents on November 1.

Census of Stocks

At the suggestion of the Rubber Growers' Association, a census of stocks was taken in Ceylon which shows that June 30 the total stocks of prepared rubber in Ceylon amounted to 9,300 tons, of which 5,000 tons were on estates over 100 acres and the balance of 4,300 tons were in the hands of dealers. These figures include the normal working stocks of dealers and on estates which are estimated about 7,000 to 8,000 tons.

Netherlands East Indies

Pests and Diseases

On the whole, estates in Java suffered little from root diseases, although here and there individual estates reported serious attacks of red root mold (West and Central Java), and white root mold (East Java and the Lampong Districts, Sumatra). Sporadic cases of brown bast are reported from almost all estates. Since a milder system of tapping is now in vogue on most estates and proper methods of treatment are applied, the disease never becomes serious, except of course on the few estates that continue to tap every day. *Phytophthora* is another disease which is always present on estates, particularly where the climate is moist. But here too efficient methods prevent the disease from becoming serious. The same is true of pink disease, which was found all over in a sporadic form, although one estate in South Sumatra was rather seriously attacked. Mildew (*Oidium*), continues to cause uneasiness. In East Java the outbreak was more severe and widespread than elsewhere in the Dutch East Indies; the disease made much headway in West and Central Java, where there was an increase in the number of estates infected. Often the number of trees on an estate to be attacked was not large, but there were several severe cases. Incidentally, the disease seems to have spread to South Sumatra, which so far had been free of infection, for sporadic cases were observed on estates at some distance from each other.

Mites were frequently observed in nursery beds and generally went hand in hand with attacks of *Helminthosporium*. In the fields the invasion of mites was often found to take place at the same time as attacks of *Oidium*.

Hevea Leaf Analysis

The usual method of testing trees according to output has the disadvantage that it is necessary to wait until the tree has reached the tapping stage before any selection can be made. Attempts have therefore been made for some time past to solve the problem in a different manner and the number of latex rings has been counted, the diameter of the latex vessels has been determined as well as the closeness of their network. In addition, chemical analyses of special parts of the rubber tree have been undertaken in the hope of finding a better method of determining the value of trees for selection. Tromp de Haas and Bobilioff have already instituted experiments in this latter direction. The former examined the bark of three trees, while Bobilioff made a more thorough test not only of the bark, but also of the leaves. Neither investigator has been able to find any connection between the analysis figures and the yields of the trees. Although it seems that as far as Hevea is concerned, little is to be expected from the chemical analysis of different parts of the tree, nevertheless, Dr. A. W. K. de Jong has considered the problem of sufficient importance to warrant his making new attempts in this direction, particularly since knowledge has advanced in the meantime. In addition, he was moved to make the experiments because the methods of Tromp de Haas and Bobilioff differed and Bobilioff, without giving any reasons for his statement, declared that the method of Tromp de Haas was not suitable.

Dr. de Jong began by investigating the rubber content of the leaves, because this is the best way to distinguish young rubber plants, and also because Bobilioff found that the difference in the rubber content of the leaves ranged from 0.5 to over 2 per cent. As the stems of the leaves have a higher rubber content than the leaves, these were used for the experiment and were first dried and reduced to powder, and the pure rubber removed by extraction. Of the two methods of separating the rubber, the first by which the material is freed of the resins with the help of alcohol or acetone and then the rubber is dissolved by benzol or benzine gave a product that was not quite stable, but always oxidized slightly in the dark. With the second method, when the rubber was extracted with benzol and the rest, after evaporation of the solvent, was treated with acetone or alcohol, a considerable amount of oxidation took place. Further investigations showed that with the first method, the oxydase present in the leaves was removed by the treatment with acetone or alcohol which preceded extraction with benzol, which was the reason why the resulting product was more stable than when the procedure was reversed.

Testing the stems of the leaves have so far not gone far enough to yield sufficient data that might usefully be employed in determining which trees should be selected for further propagation.

Extracting Gutta Percha Leaf

The results described above in respect of extraction of rubber from Hevea leaf stems led Dr. de Jong to carry out similar experiments with gutta percha leaf. The importance of these tests for gutta percha lies in the following facts: At present the high price of gutta percha, coupled with the increasing use of other cheaper insulating substances, has made gutta percha practically unsalable. The high price of gutta percha is due first to its comparative scarcity, but chiefly to the fact that the methods of extracting it from the bark and leaves as carried out on the government estates are involved and expensive. The extracting method used is mechanical and a great drawback in its application is that only fresh leaves can be used, so that leaves that fall from the trees do not come in for consideration and the material has to be picked from the trees by hand, obviously a laborious and costly procedure, to say nothing of the machinery needed for the intricate process at the factory. A cheaper method of extraction, therefore, is particularly urgent under the present circumstances. When extraction of gutta percha was first considered, experiments with a chemical process were also made and are still being carried out, but so far attempts at extraction with benzine followed by purification with ethyl-acetate have not led to satisfactory results, as the resulting product is not sufficiently durable.

Dr. de Jong's tests with gutta percha leaves patterned after the experiments with Hevea leaf stems, led to similar results; that is, when the gutta percha leaf powder was first treated with alcohol and then by benzol, the decomposition that took place in the purified gutta was not great, but was very noticeable when the process was reversed. When a suitable anti-oxidant, prepared from the alcohol extracts of the gutta percha leaf in an impure state, was added to the solvents, a sufficiently stable product resulted.

A reversal of the procedure usually followed by the scientists at Tjipetir, treating with ethyl-acetate first instead of after previous benzol extraction, gave a gutta percha with a high degree of stability as compared with the product obtained by alcohol, a stability that was still more increased by the addition of an anti-oxidant. The great drawback to the large scale use of ethyl-acetate is that not only is it expensive and decomposes readily, but it must be used in the absence of water if the effect of the anti-oxidant is not to be neutralized.

Rubber Patents, Trade Marks and Designs

Machinery Patents

United States

1,677,200. AUTOMATIC PRESS VULCANIZER. This machine is provided with automatic mechanism for introducing curing molds at predetermined intervals; for exerting pressure on the molds and for discharging them after the contained articles are properly vulcanized. The machine eliminates hand operations and governs the period of the curing heat and pressure even though each mold does not receive attention. Clifford H. Oakley, Trenton, N. J.

1,677,207. CONTINUOUS TIRE VULCANIZER. The molds are fed into the lower end of an upright cylinder, in which they are subjected to heat and pressure from above by hydraulic devices. The time of vulcanization is controlled by the frequency with which the tires contained in the molds are inserted in the bottom of the machine which frequency is also governed by the height of the machine and thickness and size of the molds. C. E. Rett, Akron, O., assignor to C. H. Oakley, Trenton, N. J.

1,677,231. STRAP MACHINE. This machine is designed to manufacture automatically straps or stays suitable for the attachment of buckles to arctics, gaiters, etc. E. W. Dunbar, Hudson, and E. J. Dempsey, West Medford, assignors to Cambridge Rubber Co., Cambridge, all in Mass.

1,677,857. SPLICING FABRIC. This is a method and apparatus for splicing the ends of fabric rolls used in making pneumatic tires, the purpose being to use rolls of indefinite length in conjunction with a continuous calendering operation. W. W. Benner, Cuyahoga Falls, and E. A. Hoener, Akron, assignors to The Firestone Tire & Rubber Co., Akron, all in O.

1,677,861. HANDLING TACKY MATERIAL. By this device a reel of wire tape is insulated with tacky strip material. The tape is drawn from a reel over a series of rollers, over a gas heater and into a die expressing or tubing machine in which it is insulated with plastic rubber. Fred Goodall, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,677,868. INNER TUBE MACHINE. After rolling up the tube on a straight mandrel on the rolling table it is automatically carried to a wrapping table where it is firmly wrapped with a spiral cloth winding. It is then removed to a carriage on which it is run into a heater and vulcanized, after which it is removed from the mandrel for splicing, etc. In operation a number of mandrels are used and kept in circulation. Max H. Pade, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,679,350. TUBING TYPEWRITER PLATENS. This invention relates to a device for tubing such articles as typewriter platens with perfectly smooth surfaces free from striations because the flow of the plastic mass is uninterrupted in its progress to the die. Charles T. Dickey, Elizabeth, assignor to Rodic Rubber Co., Garwood, both in New Jersey.

1,679,751. TESTING MACHINE. In testing rubber, textiles, etc., means are provided for indicatng through a chart at predetermined intervals the indications to be applied to the rear side of the chart as the stress strain is applied to the sample being tested. The chart when finished is removed from the machine and the indicated points projected to corresponding percentage lines on its front faces and a curve drawn to represent the behavior of the sample. Robert P. Stevenson, assignor to Henry L. Scott Co., both of Providence, R. I.

1,679,788. BATTERY BOX MOLD. This mold is associated with a hydraulic press and is so constructed that temporarily plastic material may be molded into articles of various forms according to the shape of the forming plates. The forming plates are mounted upon a rod or a piston rod of the press and have a reciprocating movement to accomplish the successive stages of molding the article. Louis J. Schroeder, assignor to Hood Rubber Co., both of Watertown, Mass.

1,680,171. RUBBER FEEDING MECHANISM. With this apparatus rubber may be automatically removed from the warming mill, conveyed to and delivered to the subsequent processing machine. A steady flow of warmed material may thus be secured to several processing machines without requiring close attention of the operator. Oscar D. Hollenbeck, Racine, Wis.

1,676,776. TUBING MACHINE. J. A. Fleischli, Clayton, assignor to Cupples Co., Manufacturers, St. Louis, both in Mo.

1,676,798. MACHINE FOR MAKING FIBROUS COMPOSITION. W. G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,676,807. FLAP TRIMMING MACHINE. H. D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,676,821. PRESS. L. E. Dougherty, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,676,825. WASHING MACHINE. J. I. Haase, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,676,829. TAPERED PLUG FOR CIRCULAR MANDRELS. J. R. Hunter, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,676,840. VALVE MECHANISM. J. A. Shively, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

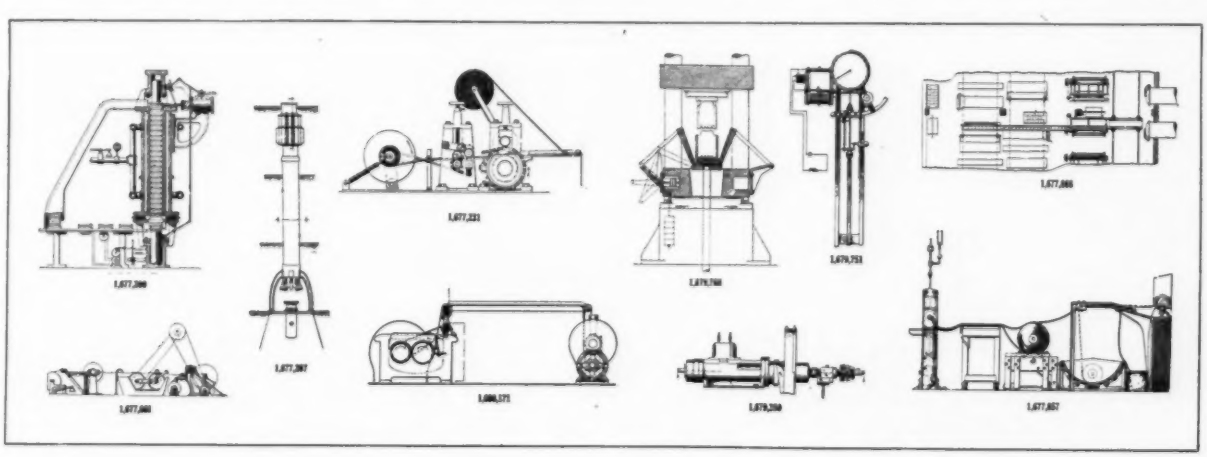
1,676,883. MACHINE FOR CUTTING OFF AND PREPARING STOCK STRIPS. T. A. Beaney, Poughkeepsie, assignor to Beaney Rubber Co., Inc., New York, both of N. Y.

1,676,970. TIRE SPREADER. A. H. Thomas, Louisville, Ky.

1,677,400. CORD FABRIC AND TIRE MAKING MACHINE. H. I. Morris, assignor to The Cord Tire Machine Co., both of Cleveland, O.

1,677,401 and 1,677,402. TIRE APPARATUS. H. I. Morris, assignor to Cord Tire Machine Co., both of Cleveland, O.

1,677,871. TIRE FINISHING MACHINE. E. D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, O.



Rubber Patents, Trade Marks and Designs

1,678,017. Flex Testing Machine. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both of Mass.

1,678,036. Apparatus for Cutting Rubber Sheets. C. H. Desautels, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,678,043. Bead Forming Device. D. E. Hennessy, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,678,326. Winding Machine. J. A. Cameron, assignor to Cameron Machine Co., both of Brooklyn, N. Y.

1,678,340. Slitting Machine. R. M. Johnstone, Roselle Park, N. J., assignor to Cameron Machine Co., Brooklyn, N. Y.

1,678,363. Machine for Investigating the Properties of Tires Under Loads. V. L. Smithers, Cuyahoga Falls, O.

1,679,016. Boot Tree. W. S. Ashton, assignor to Hood Rubber Co., both of Watertown, Mass.

1,679,114. Vulcanizing Pan. J. Churchward, New Haven, Conn.

1,679,330. Boot Tree. C. Soderlund, Belmont, assignor to Hood Rubber Co., Watertown, both in Mass.

1,679,545. Tube Mill. C. H. Roth, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,679,554. Mold. L. S. Washburn, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,679,560. Apparatus for Treating Solid Tire Material. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,679,569. Skiving Machine. J. I. Haase, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,679,626. Multiple Fasteners. J. E. Perrault, assignor to Hood Rubber Co., both of Watertown, Mass.

1,679,637. Mechanical Press. E. A. Terkelsen, Boston, assignor to A. Terkelsen, Newton, both in Mass.

1,679,751. Testing Machine. R. P. Stevenson, assignor to Henry L. Scott Co., both of Providence, R. I.

1,680,059. Beveling and Sealing Clamp. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,680,162. Tire Building Apparatus. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,680,190. Web Guiding Mechanism. G. F. Wikle, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

Dominion of Canada

281,654. Classification System. The B. F. Goodrich Co., New York, N. Y., assignee of W. D. Kmentt, Akron, O., both in the U. S. A.

281,655. Classifying Apparatus. The B. F. Goodrich Co., New York, N. Y., assignee of W. D. Kmentt and H. E. Waner, both of Akron, O., all in the U. S. A.

281,656. Rewinding Device. The Goodyear Tire & Rubber Co., Akron, O., assignee of T. L. Daniel of Atlanta, Ga., both in the U. S. A.

281,657. Tire Lining Machine. The Goodyear Tire & Rubber Co., assignee of W. C. State, both of Akron, O., U. S. A.

281,658. Expansible Pulley. The Goodyear Tire & Rubber Co., assignee of E. F. Maas, both of Akron, O., U. S. A.

281,660. Fabric Perforating Machine. The Goodyear Tire & Rubber Co., assignee of J. I. Haase, both of Akron, O., U. S. A.

281,661. Tire Band Shaping Device. The Goodyear Tire & Rubber Co., assignee of L. Wetmore, both of Akron, O., U. S. A.

281,662. Airbag. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, O., U. S. A.

281,724. Mold. C. R. Elliott, San Francisco, Calif., U. S. A.

281,971. Tuber. The Dunlop Rubber Co., Ltd., London, N. W. 1., assignee of D. F. Twiss and E. A. Murphy, Birmingham, County of Warwick, all in England.

282,152. Tire Repairer. The Kex Co., Inc., assignee of H. G. Wedler and J. F. Shuford, both of St. Louis, assignees of A. H. Fisher and M. R. Forkapa, Cleveland, both in O., U. S. A.

282,154. Vulcanizer. The Liverpool Rubber Co., Ltd., assignee of F. Amende, both of Liverpool, County of Lancashire, England.

282,333. Testing Machine. The Dominion Rubber Co., Ltd., Montreal, assignee of W. J. Kent, New York, N. Y., U. S. A.

282,342. Applying Flannel to Flaps. The Goodyear Tire & Rubber Co., assignee of L. Westmore, both of Akron, O., U. S. A.

282,343. Squeegee Applier. The Goodyear Tire & Rubber Co., assignee of E. F. Maas, both of Akron, O., U. S. A.

282,344. Calender Attachment. The Goodyear Tire & Rubber Co., assignee of J. A. Shively, both of Akron, O., U. S. A.

282,345. Printing Machine. The Goodyear Tire & Rubber Co., assignee of J. I. Haase, both of Akron, O., U. S. A.

282,346. Tube Deflator. The Goodyear Tire & Rubber Co., Akron, O., U. S. A., assignee of S. R. Harrington, Toronto, Ont.

United Kingdom

290,348. Vulcanizer. A. A. Stamboise, 7 Charterhouse Bldg., London.

290,405. Tire Vulcanizer. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, H. Willshaw, T. Norcross and F. G. Broadbent, Fort Dunlop, Birmingham.

291,492. Tire Vulcanizer. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, H. Willshaw, R. F. Lee and J. A. Cannan, Fort Dunlop, Erdington, Birmingham.

291,672. Tuber. C. S. Moomy, 60 Mooreland Ave., Carlisle, Pa., U. S. A.

291,905. Tire Vulcanizer. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, H. Willshaw, T. Norcross and F. G. Broadbent, Fort Dunlop, Erdington, Birmingham.

Germany

463,350 Water Bag Molder. Pierre Louis Menjou, Paris. Represented by A. Elliot, Berlin S. W. 48.

463,638 Mixing Mill. Dr. Hans Odenwald, Wunstorfer strasse 130, Hannover-Limmer.

Designs

1,036,380 Heel Size Apparatus. Schwelmer Gummiwaren-Gesellschaft, Schwelm i. W.

1,037,814 Vulcanizing Press. Fried. Krupp Grusonwerk, A. G., Magdeburg-Buckau.

1,038,540 Mill. G. Siempelkamp & Co., Ritterstrasse 20, 204-222, Krefeld.

Process

United States

1,676,845. Belt Making. A. A. Teisher, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,677,013. Compound Rubber Tread. L. C. Bateman, West Ealing, London, England.

1,678,015. Inner Tube. E. W. Melvin, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,678,545. Brush Process. R. M. Withycombe, Sydney, New South Wales, Australia.

1,678,866. Making Tires. C. M. Manly, Richmond Hill, N. Y., assignor to Overman Cushion Tire Co., Inc., a corp. of N. Y.

Dominion of Canada

281,583. Printing Plate. W. J. Pippert, Ridlonville, Me., U. S. A.

281,722. Manufacturing Footwear. H. C. L. Dunker, Hälsingborg, Sweden.

282,138 and 282,139. Tire Manufacture. The Dominion Rubber Co., Ltd., Montreal, Quebec, assignee of A. O. Abbott, Jr., Detroit, Mich., U. S. A.

282,140. Blank Manufacture. The Dominion Rubber Co., Ltd., Montreal, Quebec, assignee of F. R. Dean, Naugatuck, Conn., U. S. A.

282,341. Belt Joint. The Goodyear Tire & Rubber Co., assignee of E. G. Kimmich, both of Akron, O., U. S. A.

United Kingdom

290,266.† Making Shoe Sole. J. G. Borras, 22 Calle Oliver, Son Espanol, Palma de Mallorca, Baleares, Spain.

291,485. Coating Wires and Thread with Rubber. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, D. F. Twiss and E. A. Murphy, Fort Dunlop, Erdington, Birmingham.

† Not yet accepted.

Chemical Patents

United States

1,676,838. Accelerator. The reaction product of a mixture of an unsaturated aldehyde and a saturated aldehyde and an amine. L. B. Sebrell, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

Rubber Patents, Trade Marks and Designs

1,676,841. GOLF BALL CENTERS. Compounded balata resin with scrap vulcanized rubber is reduced by heat to a gel-like consistency, weighting material and sulphur added for vulcanization. P. S. Shoaf, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,677,169. ACCELERATOR. A tri-substituted guanidine containing both phenyl and tolyl substituted radicals. A. C. Burrage, Jr., Hamilton, Mass., assignor by mesne assignments, to Albert C. Burrage, Boston, Mass.

1,677,284. SHEET MATERIAL. Tod. J. Mell, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,677,360. COMPOSITE PRODUCT OF RUBBER AND METAL. A. B. Merrill, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,677,881. MOLD. A composition mold facing consisting of rubber, sulphur, an accelerator or sulphur carrier comprising a zinc salt of dimethyl-dithiorarbomic acid and a small amount of methyl mustard oil, a filler, a lightener and a drier. Adrian Baish, Wadsworth, O.

1,678,022. LATEX TREATMENT. Latex is thickened with a buffer solution, separating water-soluble substances therefrom and recovering a purified dispensable product. O. H. Smith, assignor to General Rubber Co., both of New York, N. Y.

1,678,084. ACCELERATOR. The carbon bisulphide derivative of the reaction product of diethyl-amine was paraformaldehyde. Winfield Scott, assignor to The Rubber Service Laboratories Co., both of Akron, O.

1,678,085. ACCELERATOR. The carbon bisulphide derivative of the reaction product of piperidine and furfuraldehyde. Winfield Scott, assignor to The Rubber Service Laboratories Co., both of Akron, O.

1,678,948. RUBBER COMPOSITION FLOORING. J. B. Losey and W. R. Stone, Syracuse, N. Y.

1,679,000. RUBBER SOFTENER AND COMPOUNDING INGREDIENT. A mixture of 1,000 gallons of a mineral lubricating oil having a viscosity of not over 120 seconds Saybolt at 100 degrees F., and not more than 450 pounds of cotton seed oil. C. O. North, Tallmadge, assignor to The Rubber Service Laboratories Co., Akron, both in O.

1,679,548. ACCELERATOR. A mercapto-arylthiazole whose aryl structure contains an amido group. L. B. Sebrell, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,680,234. PLASTIC MATERIAL. Mixture of acid washed asbestos and latex. W. B. Wescott, assignor to Rubber Latex Research Corp., both of Boston, Mass.

Dominion of Canada

281,646. ADHESIVE. An aqueous dispersion of rubber and an aqueous emulsion of oleo-resin. The Dominion Rubber Co., Ltd., Montreal, assignee of J. McGavack, Jackson Heights, New York, N. Y., U. S. A.

281,659. ANTI-OXIDANT. The reaction product of an olefin oxide and an aromatic amine. The Goodyear Tire & Rubber Co., assignee of H. A. Bruson, both of Akron, O., U. S. A.

281,888. COMPOSITION. A surfacing composition consisting of rubber dissolved in benzol and carbon tetrachloride into which is stirred a cooked mixture of gum damar, gum copal, China wood oil and a thinning composition. Harold P. Butler, New York, N. Y., U. S. A.

282,347. ANTI-OXIDANT. An aldehyde aniline reaction product that has been formed at a temperature of about zero degrees C. and is substantially a non-accelerator. The Goodyear Tire & Rubber Co., assignee of L. B. Sebell, both of Akron, O., U. S. A.

United Kingdom

290,178.† ACCELERATOR. Products made by the action of cyanuric compounds containing a halogen or cyanuric compounds containing replaceable hydrogen. Polymerization products of compounds containing a cyanogen residue, such as dicyandiamide may also be employed. Society of Chemical Industrie in Basle, Basle, Switzerland.

290,242.† LATEX. In an example, 5 per cent of a 10 per cent solution of the sodium salt of sulphonated undecylenic acid is placed in the collecting tank. The latex is added and allowed to stand for from 2 to 5 days and then subjected to spray desiccation. United States Rubber Plantations, Inc., assignee of W. A. Gibbons and J. McGavack, all of New York, N. Y., U. S. A.

290,313. LATEX. Addition of stabilizing agents during concentration by evaporation. Examples are colloids such as glue, gelatine, casein, vegetable gums, dextrin or soap and an alkali capable of acting with the natural acids of the latex, or saline substances such as sodium silicate or viscose which impart an alkaline reaction. Dunlop Rubber Co., Ltd., London. D. F. Twiss and E. A. Murphy, Birmingham.

290,447. SPONGY RUBBER. A cellular rubber mass, suitable for tires, is produced by incorporating with the rubber a carbonate or bicarbonate of a heavy metal, and vulcanizing under conditions permitting expansion. F. Ringer, 27 Halbgasse, Vienna.

290,602.† VULCANIZING INGREDIENT. An amorphous compound of mixture of sulphur and a stabilizer such as selenium or tellurium is used for vulcanizing rubber. British Thomson-Houston Co., Ltd., London, assignees of B. W. Nordlander, Schenectady, N. Y., U. S. A.

291,339.† ELECTRO-DEPOSITION OF RUBBER. Latex is subjected to treatment to cause or facilitate the formation of gels. After deposition the gel may be removed or rendered insoluble. Anode Rubber Co. (England), Ltd., London, assignees of Compagnie Général d'Electricité, 54 Rue La Boetie, Paris.

† Not yet accepted.

291,431† ANTI-OXIDANT. Aging of rubber is retarded by the addition of a compound formed by reaction between polyhydroxy aldehydes and amines. The reaction may take place with or without condensing agents by melting the constituents with or without solvents. Silesia Verein Chemischer Fabriken, Ida- und Marienhütte, Silesia, Germany.

291,438† ACCELERATOR. Organic selenium compounds are used as accelerators of vulcanization. In an example, benzaldehyde is added to an equal volume of a saturated solution of ammonia and hydrogen selenide in methanol. One part of the resinous product is mixed with 100 parts of rubber, 5 parts of zinc oxide and 3.5 parts of sulphur. Metallbank und Metallurgische, Ges. A. G., Frankfort-on-Main, Germany.

291,471 ELECTRO-DEPOSITION OF RUBBER. Deposition is effected intermittently to allow dispersal of any gas bubbles that may form. S. O. Cowper-Coles, Sunbury-on-Thames, London.

291,477 ELECTROLYSIS. A synthetic resin or a mixture of synthetic and natural resins is deposited electrolytically on a body connected as an anode or on a ceramic or other porous body enclosing the anode. Dunlop Rubber Co., Ltd., London, and R. C. Davies, Birmingham.

291,479 HOLLOW DIPPED ARTICLES. These are made on fusible or soluble forms in concentrated or compounded latex. Dunlop Rubber Co., Ltd., London. D. F. Twiss and E. A. Murphy, Birmingham.

291,805† LATEX. Aqueous dispersions of rubber are made viscous to facilitate dipping by the addition of substances which form viscous solutions, but not jellies. Anode Rubber Co. (England), Ltd., London, assignors of Compagnie Général d'Electricite, 54 Rue La Böétie, Paris.

Germany

462,748 HYDRO-CYCLE RUBBER. Dr. Hermann Staudinger, Hochmeisterstrasse 7, Freiburg i. Br.

462,838. PRESSED OBJECTS. Chemische Fabriken. Dr. Kurt Albert, G. m. b. H., Amoneberg b. Bieberich a Rh.

462,858 VULCANIZED MASSES. Vultex, Ltd., St. Helier, Channel Isles. Represented by R. Heering, Berlin S. W. 61.

463,271 LEAD OXIDE PRODUCTS. Modification of patent No. 439,795. Th. Goldschmidt A. G., Essen, Ruhr.

463,290 OBJECTS OF RUBBER. Dr. Eberhard Meyer, Troisdorf b. Cologne.

General

United States

July 10, 1928*

1,676,262 HEEL. J. B. Hadaway, Swampscott, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,676,329 BOOT LINING. A. A. Glidden, Watertown, and F. R. McKenzie, Brighton, assignors to Hood Rubber Co., Watertown, both in Mass.

1,676,332 HEEL. E. Hoffman, St. Louis, Mo.

1,676,430 FLUSH VALVE FLOAT. E. L. Delany, assignor to Delany Realty Corp., both of Brooklyn, N. Y.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Rubber Patents, Trade Marks and Designs

1,676,489 and 1,676,490 SPRING SHACKLE. H. D. Geyer, assignor to The Inland Mfg. Co., both of Dayton, O.

1,676,526 TIRE PRESSURE SIGNAL. J. B. Cox, Tulare, Calif.

1,676,705 TREAD ATTACHMENT. P. W. Palm, Baudette, Minn.

1,676,843 STOP SIGN. A. J. Stephens, Kansas City, Mo.

1,676,928 HEEL. B. R. Ryan, Sydney, New South Wales, Australia.

1,676,998 CONTAINER CAP. B. R. Mediati, Salt Lake City, Utah.

1,677,042 CURVILINEAR FABRIC. J. V. Moore, assignor to Moore Fabric Co., both of Pawtucket, R. I.

1,677,083 WATER WINGS. J. R. Heminger, Akron, O.

July 17, 1928*

1,677,124 TIRE. A. L. Alaj, Chicago, Ill.

1,677,292 HEEL. J. H. Pope, Hamilton, assignor to United Shoe Machinery Corp., Paterson, N. J.

1,677,301 TIRE DEFLATER. E. P. Seghers, Chicago, Ill.

1,677,372 SHEET RUBBER. B. A. Ruhling, Elkhart, Ind.

1,677,428 FOOTWEAR LINING. C. E. Bradley and C. D. Mason, assignors to Mishawaka Rubber & Woolen Mfg. Co., all of Mishawaka, Ind.

1,677,683 HOSIERY PROTECTOR. G. W. Parry, Philadelphia, Pa., R. Parry administratrix of said G. W. Parry, deceased.

1,677,747 GOGGLES. W. N. Cook, assignor to E. B. Meyrowitz, Inc., both of New York, N. Y.

July 24, 1928*

1,678,003 REPAIR DEVICE. F. G. Fahrbach, Pelham Manor, N. Y.

1,678,014 TIRE. C. M. Manly, Richmond Hill, J. M., W. G. and Basil M. Manly, executors of said C. M. Manly, deceased, assignors to Overman Cushion Tire Co., Inc., New York, both in N. Y.

1,678,211 TIRE. G. F. Davidson, Shortlands, England.

1,678,257 BLASTING CAP PROTECTOR. G. A. Livermore, Joplin, Mo., assignor to The B. F. Goodrich Co., New York, N. Y.

1,678,419 TIRE. M. Bowdan, Los Angeles, Calif.

1,678,499 DOORCHECK. F. K. Eastman, assignor to Concealed Door Check Co., both of Kokomo, Ind.

1,678,600 SYRINGE TIP. M. S. Lower, assignor to Sun Rubber Co., both of Barberton, O.

July 31, 1928*

1,678,631 TIRE. J. Barker, London, Eng.

1,678,944 GOLF TEE. N. R. Jacobsen, Wellington, N. Z.

1,678,972 AIR CUSHION. F. Bronberger, Northport, N. Y.

1,679,272 HEEL. F. A. Schultz, Hasbrouck Heights, N. J.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

August 7, 1928*

1,679,444 TIRE. B. F. Pagenhart, assignor of one-fourth to J. A. Bocinny, both of Minneapolis, Minn.

1,679,575 CORD BELT. N. E. Kimball, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,679,679 SWIMMING GLOVE. S. E. Neill, Bakersfield, Calif.

1,679,822 ELASTIC THREAD. R. C. Hall, assignor to F. W. Gorse Co., both of Needham, Mass.

1,679,941 BUSHING. F. C. Morris, San Francisco, Calif.

1,679,978 PNEUMATIC TOURNIQUET. A. L. Konwiser, Newark, and D. Loeser, East Orange, both of N. J.

1,679,992 UNIVERSAL JOINT. C. R. Short, assignor to General Motors Research Corp., both of Detroit, Mich.

1,680,006 WINDSHIELD. L. Blackmore, Highland Park, assignor to General Motors Corp., Detroit, both in Mich.

1,680,033 FLEXIBLE BUTTON. G. W. blank, Philadelphia, Pa.

Reissues

17,036 TIRE MACHINE. K. O. B. Textorius, assignor, by direct and mesne assignments, to Tex. Engineering Corp., both of New York, N. Y. Filed Apr. 29, 1922. Serial No. 557,459. Original No. 1,359,632, dated Nov. 23, 1920. Serial No. 321,533, filed Sept. 4, 1919.

17,057 INFLATABLE ARTICLE. W. J. Voit, assignor to W. J. Voit Rubber Co., both of Los Angeles, Calif. Filed Apr. 5, 1928. Serial No. 267,766. Original No. 1,644,096, dated Oct. 4, 1927. Serial No. 186,023, filed Apr. 23, 1927.

Dominion of Canada

July 10, 1928

281,585 PIPE LAYING IMPLEMENT. A. E. Rasmussen, Yakima, Wash., U. S. A.

July 17, 1928

281,770 BUTTON. C. A. Rehor, Portland, Ore., U. S. A.

281,787 ELASTIC FABRIC. J. Wassertrudinger, Barmen, Germany.

July 24, 1928

281,885 CORSET. The Dominion Co., assignee of L. J. A. Amyot, Quebec.

281,980 CONTAINER. Hudon Hébert Chaput, Ltd., assignee of D. Desharnais, both of Montreal, Quebec.

July 31, 1928

282,058 TIRE. M. N. A. Develay, Paris, France.

282,176 OVERSHOE. The Vulcan Proofing Co., assignee of C. Kenyon, Jr., both in New York, N. Y., U. S. A.

August 7, 1928

282,340 TRAFFIC MARKER. The Goodyear Tire & Rubber Co., assignee of O. H. Frank, both of Akron, O., U. S. A.

282,366 CONTAINER LID. The Ruddy Mfg. Co., Ltd., assignee of W. J. Freeborn of Brantford, Ont.

United Kingdom

July 4, 1928

290,113 NECKTIE FABRIC. L. R. Holt, 3 The Crescent, Menston, Yorkshire.

290,168† RUBBER CYCLE SPRINGS. A Ramel, 68 Rue Notre Dame de Nazareth, Paris, France.

290,206† BOTTLE CLOSURE. H. Dreuw, 32 Neue Winterfeldstrasse, Berlin, Germany.

290,258† LEATHER AND RUBBER TIRE. J. Howard and J. E. Tremble.

290,462 TIRE. J. G. Oliver, 240 Lower Rd., Rotherhithe, London.

290,513 SEAT PACKING. R. Surridge, 73 Church St., Camberwell, London.

July 11, 1928

290,581† PRINTING SURFACE. J. L. Garcia, 554 Mallorca, Barcelona, Spain.

290,762 GALOSH. P. Bullock, 90 Sunningfields Rd., Hendon, Middlesex.

290,802 TIRE. F. Nicholson, 3 Chester Terrace, Chard, Somerset.

290,853 TIRE. T. D. Suddards, Medlow, Gloucester Rd., New Barnet, Hertfordshire.

290,917 ATOMIZER. L. Vetter, 21 Maxfeldstrasse, Nuremberg, Germany.

July 18, 1928

291,125 BOOT. B. F. Oswell, Clovelly, Draycott Ave., Kenton, Harrow, Middlesex.

July 25, 1928

291,342† CABLE. Felton & Guilleaume Carlswerk Akt.-Ges., Mulheim, Cologne, Germany.

291,348† COLLISION GUARD. K. Schleiff, 28 Uhlandstrasse, Berlin, Germany.

291,394† LIFE SAVING BELT. M. Stellmacher, 42 Romintenerstrasse, Berlin, Germany.

291,464† ARTIFICIAL TOOTH. A. Karpati, 39 Dohanny Ucca, Budapest.

291,503 TIRE. F. Rapson, 2 Acacia Rd., St. John's Wood, London.

291,572 TIRE. G. W. T. Leeson, Tours, The Avenue, Chobham, Surrey.

291,620 SQUEEGEE. Barford & Perkins, Ltd., F. A. Perkins and W. J. Perry, Queen Street Iron Works, Queen St., Peterborough.

291,625 CABLE. Calender's Cable & Construction Co., Ltd., Hamilton House, Victoria Embankment, London, and S. J. Bryce, Anchor Works, Leigh, Lancashire.

291,675 BOTTLE CLEANER. H. C. Fraser, 108 Lowther Rd., Bournemouth.

August 1, 1928

291,976 GLAZING STRIP. G. W. Eastwood, Hillsboro, Stoke Park, Coventry.

† Not yet accepted.

Germany

462,674 PESSARY. Christian Carl Alstrup, Copenhagen, Denmark. Represented by Swen R. Hedstrom, Neustrelitz, Mecklenberg.

463,457 INTERCHANGEABLE HEEL PATCH. Philipp Leymann, Steinweg 20, Kassel.

Rubber Patents, Trade Marks and Designs

Designs

1,036,009 BELT. Jukius Rompler A. G., Zeulenroda.

1,036,141 COVER FOR WIRES. Berliner Gummiwaren-Fabrik, Paesrch & Kerstan, Belle-Alliance Strasse, 3, Berlin S. W. 61.

1,036,143 BUFFER. Beche & Grosz, G. m. b. H., Huckeswagen, Rheinland.

1,036,455 MARBLEIZED HARD RUBBER. Hannoversche Gummiwerke, Excelsior, A. G., Hannover-Limmer.

1,036,487 NON-SKID TREAD. Emil Blank, Mainzerstrasse 15-16, Berlin-Neukolln.

1,036,863 INFLATED BALL TIRE. Otto Luhrs, Elsasserstrasse 110, Bremen.

1,036,953 FEEDING BOTTLE RING. Erdmann Paschleben, Grosz-Corbetha.

1,037,365 WATER METER SIEVE. Dr. Heinr. Traun, & Sohne, vormals Harburger Bummi-Kamm-Compagnie, Meyerstrasse 59, Hamburg.

1,037,405 PEDAL RUBBER. Kreuzversand Klotz, G. m. b. H., Lindwurmstrasse 76 Munich.

1,037,524 HOSE WITH INSERTS. Pahl'sche Gummi-und Asbest Gesellschaft G.m.b.H., Dusseldorf-Rath.

1,037,562 FOOD CONTAINER. Eugenie Fernbach, nee Berger, Reisewitzer Strasse 32, Dresden 28.

1,037,711 PAGE TURNER. Axel Anderson, Wandsbek, b. Hamburg.

1,037,906 SPONGE RUBBER UPHOLSTERY. Hubert Worrings, Düsseldorferstrasse 8, Düsseldorf-Oberkassel.

1,037,939 WATER METER INDICATOR. Friedrich Lux G. m. b. H., Ludwigsplatz, 9, Ludwigshafen, a. Rhein.

1,037,954 BATHING CAP. Hungaria Gummiwarenfabrik A. C., Budapest-Nagyteteny. Represented by G. Loubier, F. Harmsen, E. Meiszner, Dr. F. Vollmer and Dr. H. E. Toussaint, Berlin S. W. 61.

1,037,993 CABLE. Paul Barringhaus, Witten a. d. Ruhr.

1,038,170 SPONGE RUBBER FOR SPECTACLES. Firma Albert Ziegler Schlauchfabrik, Giengen a. Brenz.

1,038,337 INTERCHANGEABLE HEEL. Hermann Betz, Wiesentalstrasse 17a, Nurnberg.

1,038,518 ARCH SUPPORT WITH FOAM RUBBER. Hugo Werner, Ockerwitzerstrasse 33, Dresden 29.

1,038,627 RUBBER FOOT. Heinrich Seidel, Viktoriastrasse 4, Munich.

Labels

United States

34,377 AIRTITE TUBE PATCH. Tire patches. Miller Motor Specialties, Inc., Dallas, Tex.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

July 10, 1928

Act of February 20, 1905

244,079 SANI-TAB—nursing bottle nipples or caps. Davol Rubber Co., Providence, R. I.

244,101 BEE-LINE—golf balls. Peoples Drug Stores, Inc., Washington, D. C.

244,112 Words: "COUNTRY CLUB" forming a circle—golf balls. Advertising Golf Ball Corp., New York, N. Y.

July 17, 1928

Act of February 20, 1905

244,205 TROPHY—tires and inner tubes. Chicago Mail Order Co., Chicago, Ill.

244,222 HIPRESS—conducting hose. The B. F. Goodrich Co., New York, N. Y.

244,241 "ROAD BUILDERS" — conducting hose. Goodall Rubber Co., Philadelphia, Pa.

244,279 Oblong with crosshatching and lines representing red and black on a yellow background. At the top of the oblong the word, "ROBCO" is enclosed in the representation of a tire tube, and below this representation the words: "SAVES TIME TUBE TEMPER"—patches. G. W. Robinson, doing business as Robinson Mfg. Co., West Orange, N. J.

244,424 GRATE STUF—tire tube and top patches. Fred Swain doing business as Standard Auto Products Co., Ohio, Ill.

Act of March 19, 1920

244,489 LEMA SPECIAL—shoes of leather, rubber, fabric, etc. Lema & Co., Boston, Mass.

244,490 LEMA—Shoes of leather, rubber fabric, etc. Lema & Co., Boston, Mass.

July 24, 1928

Act of February 20, 1905

244,673 NORTH & SOUTH CORD—pneumatic tires and tubes. The American Rubber & Tire Co., doing business as The N. & S. Tire & Rubber Co., Akron, O.

244,695 Double triangle containing the words: "A-20" and "RUBBER SERVICE LABORATORIES"—compound used as vulcanization accelerator in the curing of rubber articles. The Rubber Service Laboratories Co., Akron, O.

244,710 PATHFINDER — tires and parts, hose and tubing, etc. The Goodyear Tire & Rubber Co., Akron, O.

244,726 PLAY RITE—golf clubs and balls. Western Auto Supply Agency of Los Angeles, Los Angeles, Calif.

244,730 Representation of a girl—hospital and sanitary rubber sheeting. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

244,737 GLORIA—syringes for personal use. Hanover Rubber Co. "Excelsior," Inc., New York, N. Y.

244,751 Geometrical figure containing the word: "TOPCO"—adhesive cements for rubber tile linoleum, etc. Walter Marvin, doing business as Templar Oil Products Co., Brooklyn, N. Y.

244,755 SUPREX—pneumatic and cushion tires and tubes. Hood Rubber Co., Watertown, Mass.

244,763 Oval containing the words: "ZIP-PAR"—golf balls. Allied Golf Co., Chicago, Ill.

244,764 HAGO—ointment and salve used for rubber poisoning, etc. Harry Hague, Akron, O.

244,769 TIRETOWN—pneumatic tires and tubes. The American Rubber & Tire Co., doing business as P. T. C. Tire Co., Akron, O.

244,778 CHEERIO—golf balls. Wilson-Western Sporting Goods Co., Chicago, Ill.

July 31, 1928

Act of February 20, 1905

244,821 Fancy figure containing the words: "MORE WEAR," "GEO. C. MOORE CO.," "TRADE MARK" and "ELASTIC FABRICS"—elastic fabrics. G. C. Moore Co., Westerly, R. I.

244,887 LONG BURKE—golf balls, etc. The Burke Golf Co., Newark, O.

244,888 PENIMAID—hospital and sanitary rubber sheeting. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

244,897 BANKER—golf ball. Advertising Golf Ball Corp., New York, N. Y.

244,898 ADCLUB—golf balls. Advertising Golf Blla Corp., New York, N. Y.

244,899 QUOTATION—golf balls. Advertising Golf Ball Corp., New York, N. Y.

244,966 Circle containing the word: "MECO"—machinery belting. Mining Engineering Co., Ltd., Worcester, Eng.

Act of March 19, 1920

245,013 PLAYGOLF—golf balls, etc. Playgolf, Inc., Cleveland, O.

August 7, 1928

Act of February 20, 1905

245,018 ROAD BEAR—tires and tubes. The Cooper Corp., Cincinnati, O.

245,027 STELLAR—tires. Ajax Rubber Co., Inc., Racine, Wis.

245,058 JUNIOR CHUMS—shoes of leather, rubber, fabric, etc. Cedar Grove Shoe Mfg. Co., Cedar Grove, Wis.

245,140 PLYTEX—insoles, soles and heels. Essex Rubber Co., Inc., Trenton, N. J.

245,167 SHAUB'S FOOT ERECTOR—boots and shoes of leather, rubber, fabric, etc. B. W. Shaub, Lancaster, Pa.

245,173 SUPREX—heels. Hood Rubber Co., Watertown, Mass.

245,177 JIGGERS—tennis and athletic shoes. Endicott Johnson Corp., Endicott, N. Y.

245,190 Design containing the word: "MILLER"—surgical appliances and sanitary goods. The Miller Rubber Co., Akron, O.

Rubber Patents, Trade Marks and Designs

245,191 Design containing the word: "MILLER"—hollow balls, inflated toys and dolls. The Miller Rubber Co., Akron, O.

245,212 CLASSMATES—shoes of leather, rubber, fabric, etc. Ideal Shoe Mfg. Co., Milwaukee, Wis.

245,250 Design containing the words. "STURDY BINGO STEPS"—rubber and leather boots and shoes. Binghamton Shoe & Rubber Co., Binghamton, N. Y.

245,262 CON-TRAK-TOR — tires. United States Rubber Co., New York, N. Y.

245,291 Design containing the word: "HELSINGBORG" — shoes, galoshes, soles, heels, pads, etc. Helsingborgs Gummifabriks Aktiebolag, Helsingborg, Sweden.

Act of March 19, 1920

245,331 HAWTHORNE—golf balls. Cunningham Drug Stores, Inc., Detroit, Mich.

245,332 ALBRIGHT—golf balls. Andrew Albright, Jr., Newark, N. J.

Dominion of Canada

July 10, 1928

44,145 and 44,146 Words: "RECORD MAKER"—goods manufactured wholly or partly of rubber, rubber composition or rubber substitutes. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont.

July 17, 1928

44,171 Words: "CABLE CORD"—goods manufactured wholly or partly of rubber, rubber compositions or rubber substitutes. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont.

44,174 Word: "Maconite"—preparations for insulating electric cables. Macintosh Cable Co., Ltd., Ashbourne Road Mills, Payne St., Derby, Eng.

44,182 Word: "EXPRESS"—goods manufactured from rubber and gutta percha. The Express Rubber Co., Ltd., 76-78 Mortimer St., London, W., Eng.

44,205 Word: "PLYTEX"—soles and heels. Essex Rubber Co., Inc., Trenton, N. J., U. S. A.

August 7, 1928

44,257 Words: "ROYAL MASTER"—rubber goods. Dominion Rubber Co., Ltd., Montreal, Que.

44,270 Word: "SILVERTOWN"—casings and inner tubes. Canadian Goodrich Co., Ltd., Kitchener, Ont.

United Kingdom

July 11, 1928

488,755 Fancy representation containing the words: "TRULINE," "THE BALL FOR ALL"—golf balls. R. Anderson & Sons, Ltd., 53, George St., Edinburgh.

July 18, 1928

489,822 SPEETEX — machine transmission belting. W. Jesseman & Co. (Estd. 1878), Ltd., 20-21, Watchhouse Parade, Docks, Newport, Monmouthshire.

August 1, 1928

488,094 Design containing the words: "NEVERRIP SILK FINISH," "GUARANTEED FOR ONE YEAR," "SOLD FOR PREVENTION OF DISEASE ONLY"—finger stalls, pessaries, sheaths, operating gloves, etc. H. A. Kaysan Gesellschaft Mit Beschrankter Haftung, Barfussgasschen 12, Leipzig, Germany.

492,087 Oval containing the words: "THE 'BISON' CANVAS & RUBBER SHOE MADE IN SCOTLAND"—boots, shoes and overshoes. The Waverley Rubber Co., Ltd., Russell Rd., Edinburgh, Scotland.

Designs

United States

75,774 TIRE. Term 14 years. E. W. Coleman, Northolt Junction, Eng.

75,792 TIRE. Term 14 years. T. G. Graham, Kent, and H. F. Schippel, Akron, both in O., assignors to The B. F. Goodrich Co., New York, N. Y.

75,850 TIRE. Term 14 years. A. E. Jones, Cuyahoga Falls, assignor to Lambert Tire & Rubber Co., Barberton, both in O.

75,892 LATHER BRUSH. Term 14 years. Andrew Albright, Jr., Miami, Fla., assignor to Rubber & Celluloid Products Co., Newark, N. J.

75,928 OVERSHOE. Term 14 years. L. G. Milkes, Chicago, Ill.

Dominion of Canada

7,977 and 7,978 TIRE. Dominion Rubber Co., Ltd., Montreal, Que.

7,979 COMBINED SOLE AND HEEL. Hood Rubber Co., Watertown, Mass., U. S. A.

7,984 TIRE. Dominion Rubber Co., Ltd., Montreal, Que.

8,019 and 8,020 TIRE. Dominion Rubber Co., Ltd., Montreal, Que.

Prints

United States

11,014 GOOD-WINGFOOT-YEAR TRUCK TIRES TRACTION AND LONG WEAR. Tires. The Goodyear Tire & Rubber Co., Akron, O. Published April 5, 1928.

11,075 GOOD-WINGFOOT-YEAR TRUCK TIRES. Tires. The Goodyear Tire & Rubber Co., Akron, O. Published April 5, 1928.

11,076 GOOD-WINGFOOT-YEAR TIRES. Tires. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published June 4, 1928.

11,077 NOW HEARKEN—YE WHOSE SHOES DO WEAR BEHOLD YON AUTO WHEELS YOU TOO CAN WALK AS IF ON AIR ON GOOD-WINGFOOT-YEAR HEELS. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published June 1, 1928.

11,078 "MARCH ON!" THE CAPTAIN SHOUTED, "MARCH ON!" THE BUGLE PEALS, "MARCH ON!" THE WISE ONES ECHO, ON GOOD-WINGFOOT-YEAR WINGFOOT HEELS. Heels. The Goodyear Tire & Rubber Co., Inc., Akron, O. Published June 1, 1928.

Discovery Concerning Brown Bast

New facts which may prove to be of considerable importance have been discovered by the rubber specialist of South India, H. Ashplant, in the course of an investigation into the anatomical features of trees affected by Brown Bast. From data collected so far the susceptibility of a tree to Brown Bast increases in proportion to the number of latex rings. Thus the incidence of the disease among trees with few latex rings was found during three years' tapping to be 8 per cent, while among trees with the very highest number of latex rings the percentage was 67 per cent.

The importance of these startling figures lies in the fact that up to now one of the methods of assessing the value of a tree has been to determine the number of latex rings, on the theory that a tree with a larger number of latex rings is a better yielder than one with a limited number of these rings. If the above findings should be confirmed by further investigation, trees with many latex rings would have to be left out of consideration when mother trees for superior planting material were being tested. And incidentally, planters who have already utilized a large number of mother trees distinguished by an excess of latex rings, would have the unpleasant knowledge forced on them that they had backed the wrong horse.

Mr. Ashplant, realizing the significance of his discovery, has already instituted a more extended investigation of all trees on the station afflicted with Brown Bast.

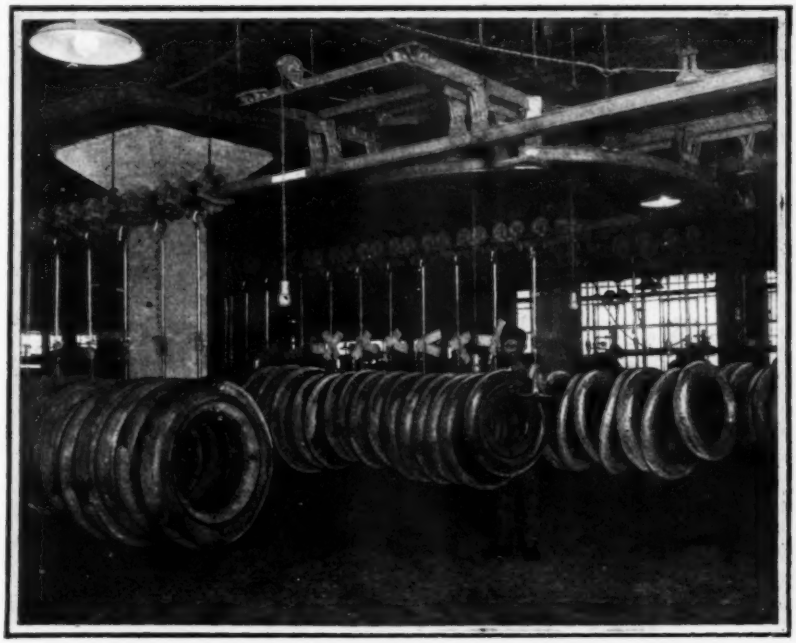
Cigar Lighter

A clever device for lighting cigar or cigarette is manufactured by Stewart-Warner Speedometer Corp., 1826 Diversey Parkway, Chicago, Ill.

It is installed and connected to the lighting system of a car by drilling a single small hole in the instrument board, and

Pass-A-Lite

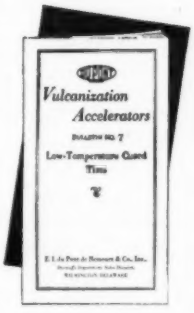
the heating element is brought to a glow by depressing the heating bowl in the socket for four or five seconds. The heat is generated by the current from the car's battery passing through the element which is so constructed that it holds the heat for several seconds. Having no wire connections, the bowl may be withdrawn and passed among the occupants of the car.



Low-temperature cured tires are no longer an experiment

HUNDREDS of thousands of THIONEX* tires are produced each month by manufacturers who are most jealous of their products' reputation for delivering long mileage.

Not all low-temperature cured tires render better service than can be obtained at the same cost from high-temperature cured tires but properly compounded THIONEX tires with THIONEX-NEOZONE treads have demonstrated their superiority again and again.



The booklet shown on this page tells how to compound THIONEX tire stocks in order to produce the best results. We shall be glad to send a copy of this booklet to anyone who is interested in the economical production of quality tires.

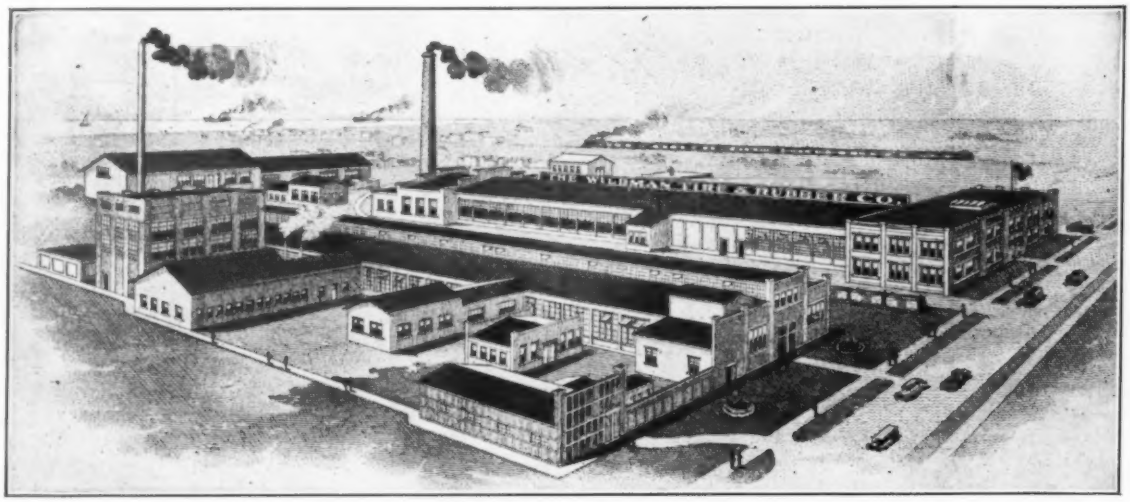
THIONEX is the accelerator that has made low-temperature cures feasible under normal factory conditions.

E. I. DU PONT DE NEMOURS & CO., Inc.
Dyestuffs Department, Sales Division
WILMINGTON, DELAWARE

Fine Rubber DUPONT Chemicals
REG. U. S. PAT. OFF.

U. S. Court Receiver's Sale

This Tire Plant Can be Bought
At Fraction of Replacement Value



Wildman Tire & Rubber Co., Plant—Port Clinton, Ohio

COMPLETE FACTORY IN HIGH CLASS CONDITION READY FOR TIRE AND TUBE MANUFACTURING

Land, Buildings and Machinery to be sold as a whole or in parcels.

This Plant Is a REAL Bargain.
There is no better distributing point.

Ample electric current is available.
Labor conditions are good and all American.

LOCATION

Located at Port Clinton, O., on the New York Central Railroad line. Port Clinton is on the Electric Road 41 miles east of Toledo; is 12 miles from Sandusky, 72 miles from Cleveland. Paved highways in all directions.

REAL ESTATE

The property includes about 17 acres of land with a reservation for a pipe line to Lake Erie. Fine shipping facilities direct from the factory.
Part of the land is suitable for allotment.

BUILDINGS

Six one-story well-built Brick Buildings, having a combined floor space of 55,834 square feet, constitute the main part of the plant in which there are excellent office arrangements.
Excellent power plant in separate building is sufficient for several times the present capacity requirements.
Five modern one-story frame buildings; combined floor space, 6053 square feet.

CAPACITY

Present capacity is 1,000 tires and 400 tubes. 3,500 tires could be produced daily with only slight additions to present equipment.

MACHINERY

Machinery in good condition. This includes a 66″ calender, Six 60″ mills, Six vulcanizers, a well-equipped machine shop, and all other necessary machinery.

Offered on the premises, at 10:30 a. m. each Saturday until sold; but at any time bids will be received on the property as an entirety, and on separate parcels of real estate or machinery and equipment. Terms: Not less than One Third cash and the balance in payments extending over not more than Thirty Months.

If interested in buying this plant communicate either with the Receiver or with his Attorney.

JESSE P. DICE
Attorney for Receiver
722 Second National Bldg.
Akron, Ohio

RUSSELL B. KOONTZ, Receiver
730 Carroll Street
Akron, Ohio

MARKET REVIEWS

Crude Rubber

New York Exchange

TRANSACTIONS on the Rubber Exchange from July 23 to August 25 inclusive were 9,058 lots, equivalent to 22,645 tons. This turnover compares with 36,955 tons done from June 25 to July 21 inclusive, or a decrease of 39 per cent. This decline strongly reflects the confidence of rubber goods manufacturers that the shortage in the crude rubber supplies predicted for the coming fall and winter will not become a serious factor in the market.

Summarized by weekly intervals, the market features were as follows: Trading in the week ended July 28 was distinctly firm and lower, September, December and March positions closing from 40 to 50 points lower than at the beginning of the week, and all positions from January to June inclusive declined to 18.80 cents except March, which closed at 18.90 cents.

British cables giving the results of a census made by direction of the British restriction authorities report that stocks held on the estates of British Malaya amount to 44,791 tons, and in the hands of dealers 13,536 tons, both as of June 30. Leading New York crude rubber authorities expressed the opinion that the excess accumulation of unshipped rubber on November 1, when restriction ceases, will be about 75,000 tons. There will also, of course, be the usual quantity of rubber on the plantations in course of preparation. This amount of rubber is having an effect on the far forward positions that accounts for the discounts prevalent on the 1929 sales.

Trading for the week closed August 4 was more active than the preceding week, and the market closed strong and active. The next advance of prices for the week was 50 points, thus restoring the closing levels of two weeks previously. The trading interest was attributable to reports of the unusually high rate of tire production for July and August. The market of the week closed on August 4 with September at 19.40 cents, December and March both at 19.50 cents. Prices of all other positions beyond September were nominal at 60 points advance.

The week ended August 11 showed considerable firmness and considerable more activity than in recent previous weeks. Orders for only moderate quantities produced immediately a firm tone in the market, but trade support was lacking sufficiently to encourage extensive operations. September closed at 19.50 cents, 10 points up from the previous week's close. December closed at 19.40 cents, or 10 points down, and March at 19.30 cents, or 20 points down. All other futures closed nominal and unchanged from prices on August 4.

For the week terminated August 18 little of interest appeared in the course of the market. Price fluctuations were merely nominal and without significance. The active futures were September, October and December. These all closed August 25, 30 points down from the close of the week preceding. The figures were as follows: September, 18.70 cents; October, 18.90 cents; December, 18.80 cents.

Price Differentials

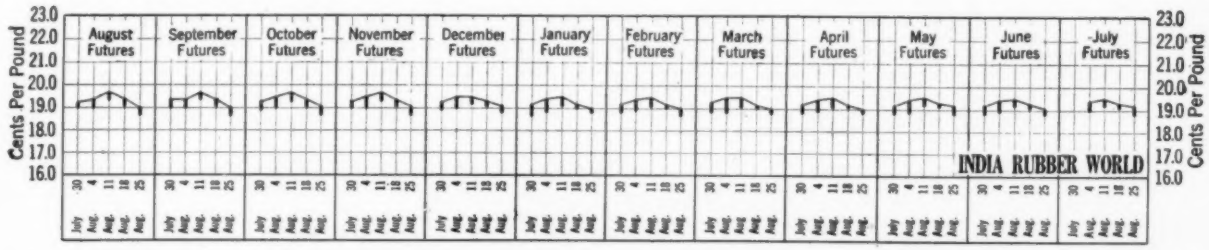
The Adjustment Committee of the Rubber Exchange following the approval of the Board of Governors, announced on August 17 the following price differentials between the various grades of Hevea plantation rubber which will prevail on all deliveries on the exchange during September:

Against "A" contracts; off quality first latex crepe at 2/10 cents per pound; Good F. A. Q. ribbed smoked sheets at 3/10 cents per pound; Ordinary F. A. Q. ribbed smoked sheets at 6/10 cents per pound.

Against "BB" contracts; C blanket crepe at ¼ cents per pound; D blanket crepe at ½ cent per pound; No. 1 brown crepe at contract price; No. 2 brown crepe at ¼ cent per pound.

Trading will begin in "BB" contracts for the first time on September 1 covering

New York Rubber Exchange—High and Low Monthly Futures



The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND

	July								August																			
1928	23	24	25	26	27	28	30	31	1	2	3	4	6	7	8	9	10	11	13	14	15	16	17	18	20	21	22	23	24	25
July	19.2	19.1	19.3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Aug.	19.3	19.2	19.3	19.2	19.0	19.0	19.0	19.1	19.1	19.3	19.4	19.4	19.4	19.5	19.7	19.6	19.5	19.4	19.3	19.2	19.4	19.3	19.2	19.1	19.0	18.8	18.8	19.0	18.9	18.7
Sept.	19.4	19.2	19.2	19.2	19.1	19.0	19.0	19.1	19.2	19.2	19.4	19.4	19.4	19.6	19.7	19.6	19.5	19.4	19.3	19.2	19.4	19.3	19.2	19.1	19.0	18.8	18.7	19.0	18.7	18.6
Oct.	19.3	19.1	19.1	19.2	18.9	19.0	19.0	19.1	19.2	19.3	19.5	19.4	19.5	19.6	19.7	19.6	19.5	19.3	19.3	19.2	19.4	19.3	19.2	19.1	19.1	18.9	18.8	19.1	18.9	18.7
Nov.	19.3	19.2	19.1	19.2	19.0	19.0	19.0	19.2	19.2	19.3	19.5	19.4	19.5	19.6	19.7	19.6	19.5	19.3	19.3	19.2	19.4	19.3	19.2	19.1	19.1	18.9	18.8	19.1	18.9	18.7
Dec.	19.3	19.2	19.3	19.2	19.0	18.9	19.0	19.1	19.2	19.2	19.5	19.4	19.4	19.5	19.6	19.5	19.4	19.2	19.3	19.1	19.3	19.2	19.1	19.1	19.1	18.9	18.8	19.1	18.8	18.8
1929																														
Jan.	19.2	19.0	19.0	19.0	18.8	18.7	18.8	18.9	19.1	19.2	19.4	19.2	19.3	19.4	19.5	19.4	19.2	19.1	19.1	19.0	19.2	19.1	19.0	19.0	18.9	18.7	18.7	19.0	18.8	18.8
Feb.	19.2	19.0	19.1	19.0	18.8	18.8	18.9	18.9	19.0	19.2	19.4	19.3	19.3	19.4	19.5	19.4	19.3	19.1	19.2	19.1	19.2	19.1	19.1	19.0	18.9	18.7	18.7	19.0	18.8	18.8
Mar.	19.3	19.0	19.1	19.0	18.9	18.8	18.8	18.9	19.1	19.2	19.5	19.4	19.3	19.4	19.5	19.4	19.3	19.1	19.2	19.1	19.2	19.1	19.0	19.0	18.9	18.8	18.7	19.0	18.8	18.8
Apr.	19.2	19.0	19.1	19.0	18.8	18.8	18.9	18.9	19.0	19.2	19.4	19.4	19.3	19.4	19.5	19.4	19.3	19.1	19.2	19.1	19.2	19.1	19.1	19.1	19.0	18.8	18.8	19.1	18.8	18.8
May	19.2	19.0	19.1	19.0	18.8	18.8	18.8	18.9	19.0	19.2	19.4	19.4	19.4	19.5	19.5	19.5	19.4	19.2	19.2	19.1	19.3	19.2	19.1	19.1	19.0	18.8	18.9	19.2	18.9	18.8
June	19.2	19.0	19.1	19.0	18.8	18.8	18.9	18.9	19.0	19.2	19.4	19.4	19.4	19.5	19.5	19.5	19.4	19.2	19.2	19.1	19.3	19.2	19.2	19.1	19.1	18.8	18.9	19.2	18.9	18.8
July	....	....	....	....	....	....	....	....	19.0	19.2	19.4	19.4	19.4	19.5	19.5	19.5	19.4	19.2	19.2	19.1	19.3	19.2	19.2	19.1	19.1	18.8	18.9	19.2	18.9	18.9

rubber of a slightly lower grade than the standard grades now traded in on the exchange. It is expected that the addition of these new grades will materially increase the volume of business transacted on the exchange.

The Adjustment Committee has also fixed the following limits of allowance on the two lowest grades deliverable against the "BB" contract:

D blanket crepe at ½ cent per pound; No. 2 brown crepe at ¼ cent per pound.

The type samples of the blanket and brown crepe grades of rubber which will be traded in on the exchange, under the new "BB" contract, beginning September 4, have been prepared by the Quality Committee and approved by the Board of Governors. They are on display in the office of the secretary and cover the following grades:

A and B blanket crepes, deliverable at contract price. C and D blanket crepes and No. 1 and No. 2 brown crepes, deliverable at fixed differentials.

New York Outside Market

The general features of the outside market by weekly periods were as follows: The market for the week closed July 28 showed considerable strength at the start and gradually eased off toward the end. Prices, however, fell off only about a half cent and a fair amount of buying went on all the week. The feature of the market was the continued scarcity of "B" and "C" blanket, roll brown and No. 1 brown. Blanket sold for spot higher than roll brown. The latter was very scarce and No. 1 brown a little more plentiful. Spot ribs closed on July 28 at 19⅛ cents buyers, 19¼ cents sellers. Paras were steady, firm with fine grades scarce. Spot upriver fine on July 28 was 21¾ cents buyers, 22 cents sellers. Balata was dull and neglected.

For the week terminated August 4 the market held strong with shipment offers higher. Spot and nearby of all grades were firm. All forward positions to the end of the year are about on a parity. For spot and August premium prices were paid for blanket, brown crepe and roll brown, which continued scarce all the week. Reports of record consumption and the steady demand for rubber tended toward higher prices. Spot ribs was up from the previous week's close, being quoted on August 4 at 19¾ cents buyers, 19⅞ sellers. "C" blanket and No. 1 brown on the same date were both 19⅝ cents buyers, 19¾ cents sellers.

Paras held steady and higher than the week before. Upriver on August 4 was firm at 22 cents buyers, 22½ cents sellers. Balatas were firm and steady with very little demand.

During the week ended August 11 the market was very steady and strong. On Wednesday prices advanced with crepe at 20½ cents buyers, 21 cents sellers and ribs 19⅞ cents buyers, 20 cents sellers. There was fair buying interest. Toward the close of the week profit taking on the exchange caused the advance in prices to be lost, yet there was good buying on the decline. Spot ribs closed on August 11 at 19¾ cents buyers, 19⅞ cents sellers, "C" blanket was practically the same, while No. 1 brown and roll brown were both quoted 20¼ cents buyers, 20½ cents sellers, with little of those grades available.

Paras were quiet and a little easier. Upriver closed on August 11, 22 cents buyers, 22½ cents sellers. Balata fairly steady, unchanged and in slight demand.

Market conditions of the week ended August 18 were extremely quiet with but little actual business passing. Prices eased off about ¼ cent, eastern offers were slightly over this market and were not sold. Factory interests were waiting lower prices. The soft grades continued scarce and commanded high prices. Spot ribs closed the week at 19⅜ cents buyers, 19½ cents sellers. "C" blanket No. 1 brown and roll brown all closed on August 18 at 19⅝ cents buyers, 19¾ cents sellers.

Paras were in less demand and easier. Balatas were in fair supply but unsought.

Extreme dullness featured the market of the week closed August 25. Only occasional factory purchases were made. Early in the week prices eased off ⅜ to ½ cent, but recovered a little at the close. The factories were waiting out the market for nearby rubber and buying futures at 18½ cents or better. They believe 18 cents a fair level for spot rubber. On August 25 ribs were 19⅛ cents buyers, 19¼ cents sellers; "C" blanket 19 cents buyers, 19¼ cents sellers; No. 1 brown 19 cents buyers, 19⅛ cents sellers; roll brown 18⅝ cents buyers, 18¾ cents sellers.

Paras were depressed with holders trying to maintain prices. Upriver closed the week at 22 cents buyers, 22¼ cents sellers. Balatas dull and neglected, available at reasonal prices.

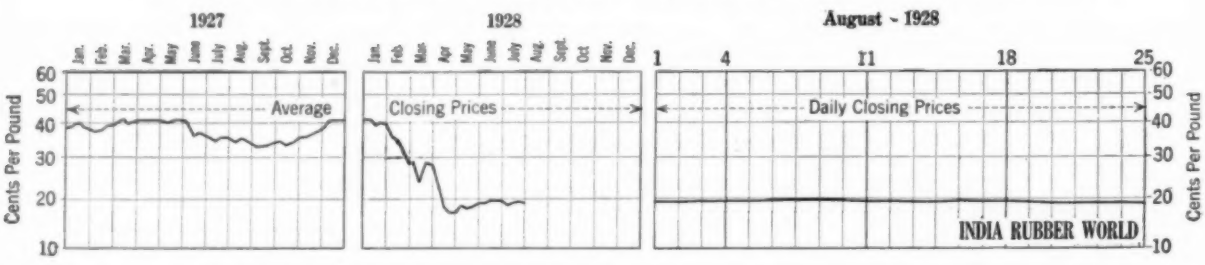
Importations of all grades in July were 33,382 tons, compared with 38,667 tons one year ago. Plantation arrivals for July were 32,536 tons, compared with 37,060 tons one year ago. Total importations of plantation rubber for seven months ended July 31 were 234,025 tons compared with 249,168 tons for the corresponding period of 1927. Total importations of all grades of rubber for seven months ended July 31 were 245,879 tons, compared with 265,517 tons for the corresponding period of 1927.

RUBBER AFLOAT TO THE UNITED STATES

(All figures in long tons)

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
July 28..	4,685	1,065	2,083	178	8,011
Aug. 4..	4,271	692	1,335	1,582	7,880
Aug. 11..	4,916	740	2,373	916	8,945
Aug. 18..	6,416	776	1,813	944	9,949
Aug. 25..	6,932	946	2,340	453	10,671

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

Plantations	July, 1928 23	24	25	26	27	28	30	31	August, 1928 1	2	3	4	6	7	8	9	10	11	13	14	15	16	17	18
Sheet																								
Ribbed smoked	19⅛	19⅜	19¼	19⅜	19⅛	19⅛	19⅛	19¼	19⅜	19⅜	19⅝	19⅝	19⅝	19¾	19⅞	19⅞	19⅝	19½	19½	19⅜	19⅜	19½	19⅜	19⅜
Crepe																								
First latex	19⅞	19⅝	19½	19⅝	19⅜	19½	19½	19⅝	19¾	19¾	20⅛	20	20	20¼	20⅛	20⅜	20⅛	20	19⅞	19¾	19¾	19⅞	19¾	19¾
No. 2 blanket	19½	19¼	19¼	19¼	19⅝	19⅜	19¼	19¼	19⅜	19½	19¾	19⅝	19⅝	20	20¼	20¼	20⅛	20⅛	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞
No. 3 blanket	19⅛	19	19	19⅛	19¼	19⅛	19⅛	19⅛	19¼	19¼	19½	19½	19⅜	19¾	20⅛	20	19⅞	19⅞	20	19¾	19⅝	19¾	19⅝	19⅝
No. 4 blanket	18⅞	18¾	18¾	18⅞	18¾	18¾	18⅞	18⅞	19	19	19¼	19¼	19¼	19½	19¾	19¾	19⅝	19⅝	19¾	19⅝	19¾	19¾	19¾	19¾
Thin clean brown	19¼	19	19	19¼	19⅛	19⅛	19⅛	19⅛	19¼	19⅜	19⅝	19½	19½	19¾	20	20	19⅞	19⅞	19¾	19⅝	19⅝	19¾	19⅝	19⅝
Rolled brown	18⅝	18⅝	18⅝	18¾	18⅞	18⅞	19	19	19⅜	19¼	20	20	19⅞	19⅞	20⅛	20¼	19⅞	19⅞	19⅞	19¾	19¾	19⅝	19¾	19¾
Off latex	19½	19½	19⅜	19⅜	19⅛	19⅛	19¼	19⅜	19½	19⅜	19⅝	19½	19⅞	20	20⅛	20⅛	19⅞	19¾	19⅝	19½	19½	19⅝	19½	19½

London

On the London market the period, July 23 to August 25 inclusive, was marked by quiet and steady tone with moderate demand and minor fluctuations in price. On July 23 spot ribs were quoted at 9½ pence sellers and on August 25, 9⅞ pence sellers. The highest price during the period was 9⅞ pence on August 15 and the lowest 9⅛ pence on August 25.

During the week closed July 28 the market was firm and steady with slight fluctuations. The week ended with practically no change from its opening prices.

The market was slightly more active during the week terminated August 4 though the volume of business done was on a small scale. Prices showed practically no change on the week, the net change being ⅛ pence lower.

The week closed August 11 was taken up with holidays, following which the tone was steady with good demand for spot. The advance was ¼ to ⅜ pence on the week.

Price fluctuations during the week ended August 18 continued on a small scale with steady tone early in the period. Rumors of impending heavy shipments from the East caused a decline of ⅛ pence. The market closed steady at a decline of ¼ to ⅛ pence on the week. On August 25 spot ribs closed at 9⅛ pence buyers, 9⅜ pence sellers.

The weekly record of London stocks since July 21 is as follows: July 28, 35,445 tons; August 4, 34,294 tons; August 11, 33,649 tons; August 18, 32,591 tons; August 25, 32,815 tons.

Singapore

The weekly auction record is given as reported under the following dates by Guthrie & Co., Ltd., Singapore.

June 15, the weekly auctions opened to a decline in quotations from consuming markets and prices were marked down accordingly. Good sheet and crepe lost one cent on the week, while low grades were more or less unchanged; 682 tons were cataloged, 546 tons offered and 437 tons sold.

June 22, the auction opened steadily, but demand tailed off towards the close. Special type pale crepes for the Japanese market sold up to 34½ cents, ordinary types marking one cent premium on sheet. Low grades were steadier; 539 tons were cataloged, 465 tons offered and 395 tons sold.

June 29, there was a moderate attendance of buyers at the auctions, but the bulk of the rubber on offer was absorbed by public and private sales. Prices were generally unchanged. Of 435 tons cataloged, 368 tons were offered and 295 tons sold.

July 19, trade buyers were prominent at the auctions and top grades went under a levelling process, 32 cents being paid for London standard and awarded sheet, a few large lots touching 32¼ cents with cased lots selling at 32½ cents. Pale crepes were somewhat erratic, lacey types selling at 31¾ cents and thin close texture types up to 33 cents. Lower grades were one cent steadier on the week; 565 tons were cataloged, 510 tons offered and 456 tons sold.

New York Quotations

Following are the New York open market rubber quotations for one year ago, one month ago and August 25, the current date

	August 25, 1927	July 25, 1928	August 25, 1928
Plantation Hevea			
Rubber latex (Hevea)...gal.	$1.50 @	$1.40 @	$1.40 @
CREPE			
First latex spot	.35⅛@.35¼	.20 @.20¼	.19⅜@
September	.35⅛@	.20 @.20⅜	.19⅜@
August-September	.35¼@	.20 @	.19⅜@
October-December	.35⅜@	.19⅞@	.19⅜@
January-March	.36 @.36⅛	.19⅞@.19¾	.19⅜@
January-June	.36½@	@	.19⅜@
Off latex, spot	.34¾@	.19⅝@	.19¼@
"B" Blanket, spot	.31 @	.19 @	.19½@
September	.31⅛@	.19 @	.18⅞@
August-September	.32 @	.18⅞@	.18⅞@
October-December	.32¼@	.18¾@	.18⅝@
January-March	.33 @	.18¾@	.18½@
January-June	@	@	.18⅜@
"C" Blanket, spot	.30½@.30¾	.18¾@	.19¼@
Brown No. 1	.30½@.31	.19 @.19¼	.18¾@
Brown No. 2	.30¾@	.18¾@.19	.18½@
Brown, roll	.28 @.28¼	.18¾@	.18¼@
Sheet			
Ribbed, smoked spot	.34⅞@.35	.19⅝@	.19 @
September	.34⅞@	.19⅝@.19¾	.19 @
August-September	.34⅞@.35	.19⅝@	.19 @
October-December	.35¼@.35⅜	.19½@	.19 @
January-March	.36 @	.19½@.19⅝	.19 @
January-June	.36½@	@	.19 @
East Indian			
PONTIANAK			
Banjermasin	.07 @	.09 @.99½	.09½@
Pressed block	.14 @	.14 @.15	.15½@
Sarawak	.07 @	.09 @.09½	.09½@
South American			
PARAS			
Upriver, fine	.30¾@	.22¾@	.21 @
Upriver, fine	*.39½@	*.27 @	*.25½@
Upriver, medium	.26 @	.16½@	@
Upriver, coarse	.20 @	.15½@	.15 @
Upriver, coarse	*.32 @	*.22½@	*.22 @
Islands, fine	.28 @	.22 @	@
Islands, fine	*.38 @	*.26½@	*.25½@
Acre, Bolivian, fine	.31 @	.23½@	.22 @
Acre, Bolivian, fine	*.40 @	*.27½@	*.26 @
Beni, Bolivian	.31 @	.23¾@	.22¼@
Madeira, fine	.30¾@	.22½@	.22 @

	August 25, 1927	July 25, 1928	August 25, 1928
South American			
PARAS—*Continued*			
Peruvian, fine	.30¼@	.22 @	.21 @
Tapajos, fine	.29 @	.22 @	.20½@
CAUCHO			
Upper caucho ball	.20½@	.13½@	.13¼@
Upper caucho ball	*.32 @	*.22½@	*.22 @
Lower caucho ball	.18½@	.13 @	.12¾@
Maniçobas			
Ceará negro heads	.22 @	@	@
Ceará scrap	.12 @	@	@
Manicoba, 30% guaranteed	.21 @	@	@
Mangabiera, thin sheet	.21 @	@	@
Centrals			
Central scrap	.20 @.21	.14¼@.14¾	.14¼@
Central wet sheet	.14 @.16	.10 @.12	.10 @
Corinto scrap	.20 @.21	.14¼@.14¾	.14¼@
Esmeralda sausage	.20 @.21	.14¼@.14¾	.14¼@
Guayule			
Duro, washed and dried	.29 @	.20 @	.19 @
Ampar	@	.21 @	.20½@
Gutta Percha			
Gutta Siak	.23 @	.18 @.19	.18½@
Gutta Soh	@	.26 @.27	.30 @
Gutta Macassar	3.00 @	2.00 @2.50	2.90 @
Balata			
Block, Ciudad Bolivar	.37 @	.39 @.40	.41 @
Colombia	.37 @	.40 @.43	.42 @
Manaos block	.41 @	.40 @.42	@
Panama	.37 @	.38 @.40	@
Surinam sheet	.57 @	.46 @.48	.50 @
Amber	.60 @	.50 @.52	.52 @
Chicle			
Honduras	‡.67 @	‡.68 @	‡.68 @
Yucatan, fine	‡.67 @	‡.68 @	‡.68 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

New York Outside Market—Spot Closing Rubber Prices—Cents, Per Pound

	August, 1928					
PLANTATIONS	20	21	22	23	24	25
Sheet						
Ribbed smoked	19¼	19	19	19⅛	19	18⅞
Crepe						
First latex	19½	19¼	19¼	19½	19⅜	19⅜
No. 2 blanket	19¼	19¼	19	19¼	19¼	19⅜
No. 3 blanket	19½	19½	18⅞	19	19	19
No. 4 blanket	19¼	18⅞	18⅝	18¾	18¾	18¾
No. 1 brown	19⅜	19	18¾	19	19	19⅛
Rolled brown	19½	19⅜	18¾	19	19½	19
Off latex	19¼	19¼	19¼	19¼	19¼	19⅛

Low and High New York Spot Prices

	1928*	August 1927	August 1926
PLANTATIONS			
First latex crepe	$0.19¼@$0.20½	$0.34¼@$0.36½	$0.37 @$0.41
Smoked sheet, ribbed	.18⅞@ .20	.34 @ .36¼	.36¾@ .40¼
PARAS			
Upriver, fine	.21¼@ .23	.30 @ .30¾	.37 @ .41½
Upriver, coarse	.13¾@ .15¼	.19¾@ .20¼	.22 @ .26½
Islands, fine	.18¾@ .20	.26½@ .27¼	.35 @ .38½

*Figured to August 25, 1928.

BRITISH GUIANA EXPORTED 750,204 POUNDS OF BALATA AND 39,861 pounds of rubber during 1927.

Reclaimed Rubber

THE consumption of reclaimed rubber continued in August at a rate fully equal to that maintained during the first six months of this year. Reclaimers consider the outlook favorable for an indefinite continuance of the demand aided by the strong statistical position of crude rubber.

Light gravity grades of good tensile properties are in the lead and their high rubber content also fits them to substitute for crude in many important lines.

The reclaim market values and prices continue to be strongly in favor of the consumer whose interests are always best served by goods of intrinsic merit. Prices as listed below are for standard grades and without exception remain firm and unchanged from a month ago.

The tire grades are, as always, most in demand. White, gray and red reclaims are readily salable. The red grades are being used largely in inner tubes.

Solid tire reclaim is in good demand for high class mechanical rubber goods because of its high abrasive wearing quality and suitability for practical factory processing.

Reclaimers have been operating their plants steadily on full production thus far this year, and report the August demand seasonal but strong.

New York Quotations

August 25, 1928

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black	1.20	$0.13½@$0.14
red	1.20	.13½@ .13¾
Auto Tire		
Black	1.21	$0.07¼@$0.08
Black selected tires	1.18	.08¼@ .08½
Dark gray	1.35	.09¼@ .10
Light gray	1.38	.12 @ .12½
White	1.40	.13½@ .14
Shoe		
Unwashed	1.60	.07¼@ .07½
Washed	1.50	.10 @ .10¼
Tube		
No. 1	1.00	.15 @ .15½
No. 2	1.10	.11 @ .11½
Miscellaneous		
Red	1.35	.13½@ .13¾
Truck tire, heavy gravity	1.55	.07¼@ .07½
Truck tire, light gravity	1.40	.07¼@ .08
Mechanical blends	1.60	.06¾@ .07½

Rubber Scrap

AUGUST demand for pneumatic tire scrap was seasonally very quiet, as for July. The record consumption of reclaim so far this year has depleted scrap tire stocks and for the past two months there is now virtually no reserve accumulation. Stocks now passing into the rubber reclaiming industry represent current collecting.

Boot and shoe scrap runs so low in price that dealers are not attempting to maintain stocks.

In the case of solid tires a slightly better situation prevails yet not sufficiently to indicate that a marked increase of business in this grade is at hand. Steel tire bases still represent the most valuable portion of scrap solid tires and the rubber is removed often by firing it simply to obtain the steel rims.

Mechanical air brake hose and mixed tires are moving steadily at the usual low and stable prices.

The standard grades of scrap remain unchanged in the current market from the quotations of a month ago with the exception of slight advances in solid tires, red and compounded inner tubes.

New York Quotations
Carload Lots

August 25, 1928

Mechanicals	Price Per Pound
Mixed black scrap, lb.	$0.00½@$0.00⅝
Heels, lb.	.00½@ .00⅝
Hose, air brake, ton	20.00 @25.00
regular soft, ton	13.00 @15.00
No. 1 red, lb.	.02 @ .02¼
No. 2 red, lb.	.01 @ .01¼
White, druggists' sundries, lb.	.02 @ .02½
Mechanical, lb.	.01½@ .01⅝
Tires	Price Per Pound
Pneumatic Standard—	
Mixed auto tires with beads, ton	$22.00 @$23.00
Beadless, ton	29.00 @30.00
White auto tires with beads, ton	39.00 @40.00
Beadless, ton	50.00 @52.00
Mixed auto peelings, ton	31.00 @32.00
Solid—	
Mixed motor truck, clean, ton	19.00 @20.00
Inner Tubes	
No. 1, floating, lb.	.06¼@ .06½
No. 2, compounded, lb.	.03¾@ .04
Red, lb.	.05 @ .05¼
Mixed tubes, lb.	.03½@ .03¾
Boots and Shoes	
Boots and shoes, black, lb.	.01¾@ .01⅞
Red and white, lb.	.00½@ .00¾
Trimmed arctics, black, lb.	.00½@ .00¾
Untrimmed arctics, lb.	.00½@ .00⅝
Tennis shoes and soles, lb.	.00½@ .00¾
Hard Rubber	
No. 1 hard rubber, lb.	.06 @ .07½
Battery jars, black compound, lb.	.01 @ .01½

Public Financing

A. S. Hopkins

RUBBER companies have not been happy in their record of earnings for the past few years. Very few companies have made anything like a normal profit. This condition has been attributed to many things, one of the chief being fluctuations in the crude rubber market. Possibly the consumer has benefited, but no one else has. Working capital has been depleted in the process and many companies are cramped for funds. Much may be done by management to meet this condition. Increased turnover is particularly helpful, but the mind of the harassed manager turns to public financing for relief.

There are three forms of public financing applicable: mortgage bonds, debenture bonds and preferred stocks.

Mortgage bonds are based on a first mortgage on the fixed assets of the company. They are paid serially over a period of years, usually ten to twenty, and the interest is paid semi-annually. They are equivalent to a bank loan, but cannot be called except on agreed dates and are therefore a long time loan. There are certain ratios and conditions that apply. The amount of the mortgage ranges from 40 to 60 per cent of the conservative fixed assets, but is further limited by the fact that the average net earnings over a period of three to five years must equal three times the amount of annual bond interest. Furthermore the last year's profits should not show a decided drop.

A debenture bond differs from a mortgage bond in that it may be based on all of the assets, fixed and liquid, and the ratio of earnings is of prime importance. The debenture bond is much like a prior preference stock, except that it is paid serially and is still a loan.

Preferred stocks are of several varieties, but are alike in that the investor becomes a part owner and the money is not a loan but an investment in the business. The ratios are about as follows: the total amount of bonds and preferred stocks should not exceed the total fixed and liquid assets, good will and development expense being represented by common stock. Earning power again fixes the amount of preferred stock that can be marketed.

This indicates need of improved business methods. Only satisfactory earnings will permit of public financing.

H. MUEHLSTEIN & COMPANY, Inc.

41 East 42nd St., New York City

Scrap RUBBER *Crude*

BRANCHES

CHICAGO
327 So. La Salle Street

AKRON
1111 Akron Savings & Loan Bldg.

BOSTON
176 Federal Street

LOS ANGELES
728 So. Hill Street

NEW YORK
Liggett Bldg., 42nd St. and Madison Ave.

LONDON E.C. #2, ENGLAND
#70 Finsbury Pavement

HAMBURG #36, GERMANY
Valentinskamp #74

WAREHOUSES
JERSEY CITY, N.J. *and* AKRON, OHIO

"They want hose that resists sulphuric"

"JONES is asking again about hose that will stand up against Sulphuric Acid. I'd hate to turn down any more work of this kind. What have you done about it?"

"An R & H man dropped in shortly after you first mentioned it. Among other good suggestions he recommended the use of R & H 50. We tried it out and it works fine."

"We'll go right ahead with production, then."

The
ROESSLER & HASSLACHER CHEMICAL CO.
709 Sixth Avenue, New York, N. Y.

R&H

R & H also cooperates through its Laboratories with:
CASE HARDENING, PLATING, BLEACHING, PAPER, CERAMIC *and other industries*

Compounding Ingredients

TIRE manufacturing is proceeding under pressure in the Akron section to attain the maximum output on three shifts daily. The demand for operators has outstripped the supply for trained tire makers, otherwise the tire output could expand still further. Production of mechanical rubber goods lines is in good volume. The output of footwear and other lines is seasonal. Plants manufacturing automobile topping are pressed to capacity by the demand for goods. These manufacturing conditions exert a strong influence to sustain the excellent market for compounding ingredients.

ACCELERATORS. In the larger rubber companies interest is definitely centering in the use of the better high speed accelerators, that is those that give the best physical properties most economically.

ANTI-OXIDANTS. Appreciation of the value of these materials is also increasing. In fact, the more important companies in the rubber industry regard them as indispensable.

BENZOL. Production has increased, stocks are ample and demand was well maintained during the month.

CARBON BLACK. The last week in July demand was fair. The first week in August the price advanced one-half cent owing to the increase in the production tax levied in Louisiana. The advanced price holds firm and the demand active.

CLAY. This is the least expensive of rubber reinforcing pigments and in consequence is consumed in steadily increasing quantities as competition opens the way.

DEGRAS. The price held steady all the month with a fair volume of business.

LITHARGE. Slightly increased demand was evident the last week of July and August business maintained a slight increase in demand for spot.

LITHOPONE. There was good movement of stock on contract to rubber manufacturers and considerable active buying in general.

MINERAL RUBBER. Consumption of this staple material has been heavy all summer and is reported increasing in tonnage.

SOLVENT NAPHTHA. The supply is reported as ample, the consumption routine, prices steady and no increase in the number of consumers.

V. M. P NAPHTHA. In this grade a strong undertone prevailed. In the last week of July the market advanced one cent a gallon. A strong demand prevailed and active buying was followed by a second advance, about the middle of August, of 1 cent a gallon.

STEARIC ACID. Strong market conditions prevailed with prices firm.

ZINC OXIDE. Spot trade was not active, but there was a fair demand for delivery on contracts.

New York Quotations

August 25, 1928

Accelerators, Inorganic

Lead, carbonate	lb.	$0.08½	@
Lead, red	lb.	.09¾	@
sublimed white	lb.	.07¾	@
sublimed blue	lb.	.07¾	@
super-sublimed white lead	lb.	.08¼	@
Lime, R. M. hydrated	ton	12.50	@
Litharge	lb.	.08¾	@
Magnesia, calcined	lb.	.45	@ .60
carbonate	lb.	.06	@ .07
Orange mineral A.A.A	lb.	.11¾	@

Accelerators, Organic

A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.		@
Aero X	lb.	.60	@
Aldehyde ammonia	lb.	.65	@ .70
B. B.	lb.		@
Captax	lb.		@
Crylene, hard form	lb.		@
Paste	lb.		@
Di-ortho-tolylguanidine	lb.	.48	@ .50½
D. P. G.	lb.	.40	@ .45
Ethylidine aniline	lb.	.45	@ .47½
Formaldehyde aniline	lb.	.31	@ .35½
Grasselerator 102	lb.	.58½	@ .61
552	lb.	4.45	@
808	lb.	.79	@ .85
833	lb.	1.17	@ 1.30
Heptene	lb.		@
Hexamethylene tetramine	lb.	.57½	@ .60
Lead oleate, No. 999	lb.	.15	@
Witco	lb.	.13	@
Methylene dianiline	lb.	.37	@
Monex	lb.		@
Piperidine pentamethylene dithio carbamate	lb.	4.45	@ 4.60
Plastone	lb.		@
R. & H. 40	lb.	.40	@ .42½
50	lb.	.40	@ .42½
Safex	lb.		@
Super-sulphur, No. 1	lb.		@
No. 2	lb.		@
Tensilac No. 39	lb.	.50	@ .52½
No. 41	lb.	.50	@ .52½
Thermlo F.	lb.	.50	@ .55
Thionex	lb.	3.25	@
Thiocarbanilid	lb.	.23	@ .32
Trimene	lb		@
base	lb.		@
Triphenylguanidine	lb.	.60	@
Tuads	lb		@
Vulcanex	lb	.58	@
Vulcanol	lb.	.80	@
Vulcone	lb	.58	@
ZBX	lb.		@
Z-88	lb.	.50	@ .60
Zimate	lb.		@

Acids

Acetic 28% (bbls.)	100 lbs.	3.62½	@ 3.87½
glacial (carboys)	100 lbs.	13.30	@13.55
Sulphuric, 66°	100 lbs.	1.60	@

Alkalies

Caustic soda, solid	lb.	$0.02¾	@$0.03

Anti-Oxidants

Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Antox	lb.		@
Neozone	lb.	.69	@
A	lb.	.61	@
Oxynone	lb.	.68	@ .90
Resistox	lb.	.54	@ .65
Stabilite	lb.	.64	@
V. G. B.	lb.		@

Colors

BLACK

Bone	lb.	.08	@
Carbon (see compounding ingredients)			
A. & W. nonfli No. 1	lb.	.40	@
Drop	lb.	.05½	@ .15
Gastex	lb.		@
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Akco blue	lb.	1.80	@
Du Pont, N.	100 lbs.	1.35	@
Marine, A. C.	100 lbs.	1.30	@
5 R.	100 lbs.	1.00	@
2 G.	100 lbs.	.90	@
Huber Brilliant	lb.	4.20	@ 4.70
Prussian	lb.	.33	@ .45
Ultramarine	lb.	.09	@ .35

BROWN

Huber Mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Akco green	lb.	2.60	@
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Du Pont, A. C.	100 lbs.	3.00	@
4 G.	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Huber Brilliant	lb.	4.35	@
Oxide of chromium	lb.	.34	@ .40

ORANGE

Du Pont, 2 R.	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@
Huber Persian	lb.	.50	@ 1.00

RED

A. & W. red	lb.	0.75	@ 3.00
purple	lb.	2.00	@ 4.00
Akco red	lb.	2.75	@
Antimony, golden, No. 40	lb.		@
No. 60	lb.	.16	@ .20
golden 15/17%	lb	.20	@ .23
Aristi	lb.	2.75	@
Huber Brilliant	lb.	1.35	@ 1.85

Colors—*(Continued)*

RED

Antimony			
Crimson, R.M.P. No. 3	lb.	$0.48	@$0.60
Sulphur free	lb.	.50	@ .55
7-A.	lb.	.35	@
Z-2	lb.	.22	@
Vermilion, No. 5	lb.		@
No. 15	lb.		@
Du Pont, R. I.	100 lbs.	1.75	@
6 B.	100 lbs.	.90	@
Brilliant A. C.	100 lbs.	.90	@
Iron Oxides			
bright pure domestic	lb.	.12	@
bright pure English	lb.	.14	@
bright reduced English	lb.	.08	@
bright reduced domestic	lb.	.10	@
Indian (maroon), pure domestic	lb.	.11	@
Indian (maroon), pure English	lb.	.11	@
Indian (maroon), reduced English	lb.	.08	@
Indian (maroon), reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.03	@ .04¼
Sunburnt red	lb.	.14	@
Venetian reds	lb.	.02	@ .06
Vermilion, Eng. quicksilver	lb.	1.90	@

WHITE

Lithopone	lb.	.05¼	@ .05¾
Albalith	lb.		@
Azolith	lb.	.05¼	@ .05¾
Grasselli	lb.	.05¼	@ .05¾
Sterling	lb.		@
Vanolith	lb.	.05½	@
Titanox	lb.	.10	@ .10½
Zinc Oxide			
AAA (lead free)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06¾	@ .06¾
Z (8% leaded)	lb.	.06¾	@ .06¾
French Process			
Green seal	lb.	.10¾	@ .10¾
Red seal	lb.	.09¾	@ .09¾
White seal	lb.	.11⅝	@ .11⅞
Kadox	lb.		@
XX	lb.		@

YELLOW

A. & W. yellow	lb.	2.00	@ 4.00
Akco yellow	lb.	1.45	@
Cadmium sulphide	lb.	.75	@ .85
Chrome	lb.	.16	@ .17
Du Pont N.	100 lbs.	4.00	@
R. W.	100 lbs.	.78	@
Grasselli cadmium	lb.		@
Huber canary	lb.	3.30	@ 3.80
Ochre, domestic	lb.	.01½	@ .02½
Oxide, pure	lb.	.09	@
Zinc imported	lb.	.24½	@

Compounding Ingredients

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate pwd.	lb.	.11	@
lump	lb.	.11	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	57.50	@60.00

Compounding Ingredients *(Continued)*

Barytes, imported	ton	$27.00	@$34.00
dry ground, white	ton	32.50	@
dry ground, off color	ton	25.00	@
Foam "A" (f. o. b. St. Louis, bbls.)	ton	23.00	@
Foam "A" (f. o. b. St. Louis, bags)	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.03½	@
pulp	ton	42.50	@45.00
Carbon Black			
Aerfloted arrow	lb.	.08½	@ .12
Compressed	lb.	.08	@ .12
Uncompressed	lb.	.07½	@ .11½
Fumonex	lb.	.06	@ .09
Micronex	lb.	.08½	@ .12½
Carrara filler	ton	20.00	@
Chalk	ton	12.00	@
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01¼	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	14.00	@
Suprex	ton	10.00	@22.00
Tensulite	ton	14.00	@25.00
Cotton flock, black	lb.	.13	@
light-colored	lb.	.10	@ .15
white	lb.	.11½	@ .21
Glue, high grade	lb.	.24	@ .28
low grade	lb.	.21	@ .25
Infusorial earth	ton	45.00	@
Mica, amber (fact'y)	ton	80.00	@
Pumice stone, powd.	lb.	.02½	@ .04
Rotten stone (bbls.)	lb.	.02½	@ .04½
Soap bark	lb.	.15½	@ .16
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	15.00	@
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Velvetex	lb.	.04½	@ .06
Whiting:			
Domestic	100 lbs.	1.00	@
English, cliffstone	100 lbs.	1.50	@
Quaker	ton		@
Snow white	ton		@
Sussex	ton		@
Vancolloid	ton	27.00	@
Vansulite	ton	17.40	@26.00
Westminster Brand	100 lbs.		@
Witco (c.l.) (fact'y)	ton	12.00	@
Whiting, imp. chalk	100 lbs.	.90	@ 1.00
Paris White, Eng. Cliff	100 lbs.	1.50	@ 3.00

New York Quotations

August 25, 1928

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	$0.05	@$0.06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kapak, M. R.	ton	40.00	@90.00
M-4	ton	[illegible]	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00
Vansul Puro	ton	27.00	@30.00

Oils

Mineral	gal.	.18	@
Kerosene	gal.	.15	@
Rapeseed	gal.	.90	@
Red oil, distilled	lb.	.09¼	@ .10¼
Rubber process	gal.	.25	@
Spindle	gal.	.30	@

Rubber Substitutes or Factice

Black	lb.	.08	@ .14
Brown	lb.	.08	@ .15
White	lb.	.09	@ .16

Softeners

Burgundy pitch	100 lbs.	5.00	@
Atlas	100 lbs.	6.50	@
Corn oil	lb.	.10¾	@
Cottonseed oil	lb.	.08¾	@
Cycline oil	gal.	.27	@ .34
Degras	lb.	.03½	@ .04½
Fluxrite (fluid)	lb.	.05	@ .06
Moldrite	lb.	.05½	@ .07
Palm oil (Lagos)	lb.	.09	@
Palm oil (Niger)	lb.	.08½	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08¼	@ .08½
Pigmentar	gal.	.33	@ .39
Pine oil, steam distilled	gal.	.68	@ .70
Rosin K	bbl.	9.90	@
Rosin oil, compounded	gal.	.30	@
No. 3	gal.	.60	@
No. 556	gal.	.51	@
Rubite	lb.	.10½	@
Rubtack	lb.	.08½	@
Shellac, orange	lb.	.70	@

Softeners—*(Continued)*

Stearex	lb.	$0.12	@$0.16
Stearic acid, double pressed	lb.	.12¼	@ .12¾
Tackol	lb.	.09	@ .15
Tar (retort)	bbl.	12.50	@13.00
Tasco W-S No. 1	lb.	.06	@
A	lb.	.05	@
Vansulol	lb.	.10½	@
Vantar (Pine Tar)	gal.	.35	@
Waxene	lb.	.30	@ .40
Woburn oil	lb.	.05½	@ .07

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.27	@ .28
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05	@ .06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.06½	@ .07
Cyclohexanone	lb.	.60	@
Dip-Sol	gal.	.12	@
Gasoline			
No. 303			
Tankcars	gal.	.14	@
Drums, c. l.	gal.	.30	@
Drums, l. c. l.	gal.	.35	@
Hexalin	lb.	.60	@
acetate	lb.	.70	@
Rubberlene	gal.	.12	@
Rub-Sol	gal.	.10½	@
Solvent naphtha	gal.	.35	@
Sweet rubber cement			
naphtha	gal.	.15	@
Turpentine, Venice	lb.	.20	@
steam distilled	gal.	.53	@ .54

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Soft rubber (c.l.)	100 lbs.	2.40	@ 2.75
(l.c.l.)	100 lbs.		@
Superfine commercial flour			
(210 lb. bbls.)	100 lbs.	2.55	@ 3.10
(100 lb. bags)	100 lbs.	2.40	@ 2.80
Tire brand, superfine	100 lbs.	1.90	@ 2.25
Tube brand, velvet	100 lbs.	2.40	@ 2.75
Sulphur chloride	lb.	.03¼	@ .03½
Vandex (selenium)	lb.		@
(See also Colors—Antimony)			

Waxes

Beeswax, white, com.	lb.	.55	@
carnauba	lb.	.33	@
ceresine, white	lb.	.12	@
montan	lb.	.07½	@
ozokerite, black	lb.	.27	@
green	lb.	.28	@
Paraffin			
122/124 white crude scale	lb.	.05	@
124/126 white crude scale	lb.	.05	@
123/125 fully refined	lb.	.05½	@
125/127 fully refined	lb.	.06½	@

Rubber Division Swampscott Meeting Program

THOSE who attend the fall meeting of the American Chemical Society at Swampscott, Mass., during the week of September 10 to 15 are assured a series of interesting sessions and diversions. Program details of the Division of Rubber Chemistry have been announced as follows:

DIVISION OF RUBBER CHEMISTRY

H. L. Fisher, Chairman
H. E. Simmons, Secretary

Hotel Preston

Tuesday, 2.00 P. M.

The Effect of Anti-oxidants in Typical Rubber Stocks, Marion C. Reed.
A Practical Method of Obtaining Dry Air for Humidity Control in a Rubber Laboratory, Fred S. Conover.
The Mechanism of the Reinforcement of Rubber by Pigments, Harlan A. Depew.
A New Physical Test for Vulcanized Rubber, D. D. Wright.
The Evaluation of Carbon Blacks, D. F. Cranor and H. A. Braendle.
The Kinetics of the Vulcanization of Rubber, B. W. Nordlander.
The Effect of Temperature on the Stress-Strain Properties of Vulcanized Rubber, A. A. Somerville.

Wednesday, 9.00 A. M.

Joint Meeting of the Colloid Chemistry and Rubber Chemistry Divisions.

Rubber Structure Research and Its Bearing on the Elastic Properties of Colloids in General, Ernst A. Hauser.
The Structure of Rubber and Other Elastic Colloids, G. S. Whitby.
Pigment Dispersion in Rubber, Ernst A. Granquist.
The Colloid Chemistry of Rubber, Benton Dales.

Wednesday, 2.00 P. M.

SYMPOSIUM ON "POLYMERIZATION"

Joint Meeting of Cellulose, Leather and Gelatin, and Rubber Divisions.

Aspects of Polymerization with Special Reference to Hydrocarbons, G. S. Whitby.
Polymerization, Association, and Aggregation, Harold Hibbert.
X-Ray Contributions to the Problem of Polymerization, George L. Clark.
Supermolecular State of Polymerized Substances in Relation to Thin Films and Interfaces, S. E. Sheppard, A. H. Nietz and R. L. Keenan.

Thursday, 9.00 A. M.

Time and Temperature Plasticity Relations for Crude Rubber as Measured with Goodrich Plastometer, E. Karrer and E. O. Dieterich.
Meaning and Measurement of Plasticity, C. G. S. Units and a New Plastometer, E. Karrer.
A New Theory of the Behavior of Rubber, W. J. Kelly.
Microscopical Observations on the Vulcanization of Sulphur-Free Rubber Compounds, James C. Walton.
Dimethyl Octadienes and Their Relations to Rubber, T. Midgley, Jr.
Some Observations on Rubbers with Low Nitrogen Content, A. D. Cummings and L. B. Sebrell.
A Comparison of the Rate of Combination of Sulphur with Rubber and the Rate of Vulcanization, E. R. Bridgwater.
Report of the Committee on Physical Testing, J. E. Partenheimer.
Report of the Raw Rubber Specifications Committee, E. B. Spear.
Business meeting.

Thursday, 6.00 P. M.

Division dinner.

TRUCKS AND BUSES REGISTERED A GREATER PERCENTAGE INCREASE than passenger cars during 1927 according to *Commerce Reports*. Passenger cars the world over showed an increase of 7.1 per cent, while for the same period the increase in trucks and buses was 10.1 per cent.

Cotton and Fabrics

AMERICAN COTTON. The price for middling spot cotton on August 1 was 19.90 cents compared with 22.80 cents on July 2, a month ago. Fluctuations from this figure were on the whole downward although there was a brief upward response to the government's first crop condition report which set the estimated yield at 14,291,000 bales or about 450,000 bales less than estimates from private sources had placed it. The decline of the market was only temporarily interrupted by the rally caused by the official report and was soon resumed. Spot middlings being quoted at 18.85 cents on August 18. On August 25, the price was 19.10 cents.

EGYPTIAN COTTON. During the past month there was a further decline in Egyptians owing to official figures showing an increased acreage this season, coupled with continued poor demand from the trade. One bullish feature has been the continued large exports which have reduced the stock in Alexandria about a million cantars below that of last year at this time. However, the carry-over will be fairly large, approximately 1,500,000 cantars or about the same as that of two years ago.

AMERICAN EXTRA STAPLES. The domestic crop of extra staples seems to be progressing normally with prospects for a substantial yield. However, it will be at least two months before this is assured. Meanwhile, lack of demand is holding the basis at a remarkably low level. There are many factors which later may easily cause a sharp rise in basis and present levels do not often long prevail.

ARIZONA COTTON. The Pima cotton crop continues to progress normally and an excellent yield is expected.

Cotton and Fabrics

DUCKS, DRILLS AND OSNABURGS. The market for mechanical ducks is active with prices very sensitive to market fluctuations of the raw cotton market.

Prices have moved upward somewhat with the expectation of full clearance of such inventories as may have accumulated over the past seven months.

SHEETING. The market for the past half month has been very active at prices acceptable to the mills. No further increase of activity, however, is anticipated until the appearance of the next government cotton crop estimate on September 8.

RAINCOAT FABRICS. The raincoat trade is very busy at present producing the light tan trench coat which is being sold in large volume both for men's and women's wear. Trench coats are also being made in red, green and blue. These colors are gaining in popularity and are liable to displace the tan shades for women.

TIRE FABRICS. Conditions in the tire fabric market have taken a distinct turn for the better. Apparently tire manufacturers are producing more tires than they had anticipated making at this period of the year and were not provided with supplies of fabric sufficient for the unexpected volume of production. Consequently, all of them have been in the market for large quantities for near-by deliveries and most of the fabric mills are booked up to capacity for September and October delivery, besides a fair amount of business beyond that time.

New York Quotations

August 25, 1928

Drills

38-inch	2.00-yard.....yard	$0.18½ @
40-inch	3.47-yard.....	.10⅞ @
50-inch	1.52-yard.....	.24⅝ @
52-inch	1.90-yard.....	.19¾ @
52-inch	2.20-yard.....	.17⅛ @
59-inch	1.85-yard.....	.20¼ @

Ducks

38-inch	2.00-yard D. F.yard	.18¾ @
40-inch	1.45-yard S. F.....	.25⅞ @
72-inch	1.05-yard D. F.....	.35¼ @
72-inch	16.66-ounce.....	.39⅝ @
72-inch	17.21-ounce.....	.40⅞ @

MECHANICAL

Hose and belting....pound	.34	@
Specials	.38	@

TENNIS

52-inch 1.35-yard .....yard	.28½ @	

Hollands

RUBBER TRADE SPECIAL

R. T. 3 A.

31-inch .....yard	.16	@
40-inch	.20	@

RED SEAL

36-inch	.15½	@
40-inch	.16½	@
50-inch	.25	@

GOLD SEAL

40-inch, No. 73.....	.20¾	@
40-inch, No. 80.....	.22	@

Osnaburgs

40-inch 2.35-yard .....yard	$0.15¾ @	
40-inch 2.48-yard	.14½ @	
40-inch 3.00-yard	.12 @	
40-inch 10-oz. part waste..lb.	.20 @	
37-inch 2.42-yard	.14⅞ @	

Raincoat Fabrics

COTTON

Bombazine 64 x 60....yard	.11	@
Bombazine 60 x 48.....	.10	@
Plaids 60 x 48.....	.12½	@
Plaids 48 x 48.....	.11½	@
Surface prints 64 x 60.....	.13½	@
Surface prints 60 x 48.....	.12½	@
Print cloth 38½-in., 60 x 64.	.07¾	@

Sheetings, 40-inch

48 x 48, 2.50-yard.....yard	.12⅝ @	.12¾
48 x 48, 2.85-yard.....	.11 @	.11⅛
64 x 68, 3.15-yard.....	.11⅞ @	.12
56 x 60, 3.60-yard.....	.09¾ @	.09⅞
44 x 48, 3.75-yard.....	.08⅞ @	.09

Sheetings, 36-inch

48 x 48, 5.00 yard.....yard	.06⅞ @	
40 x 44, 6.15-yard.....	.05⅝ @	

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded.....pound		@
Peeler, karded.....	$0.48	@

BUILDER 23/11

Peeler, karded.....pound	.47	@

BUILDER 10/5

Peeler, karded.....pound	.42	@

CORD 23/5/3

Egyptian, combed ....pound		@
Egyptian, karded		@
Peeler, karded, 1 1/16-in.....	.47	@

CORD 23/4/3

Peeler, karded.....pound	.48	@

CORD 23/3/3

Peeler, karded.....pound	.54	@

CORD 15/3/3

Peeler, karded.....pound	.45	@

CORD 13/3/3

Peeler, karded.....pound	.44	@

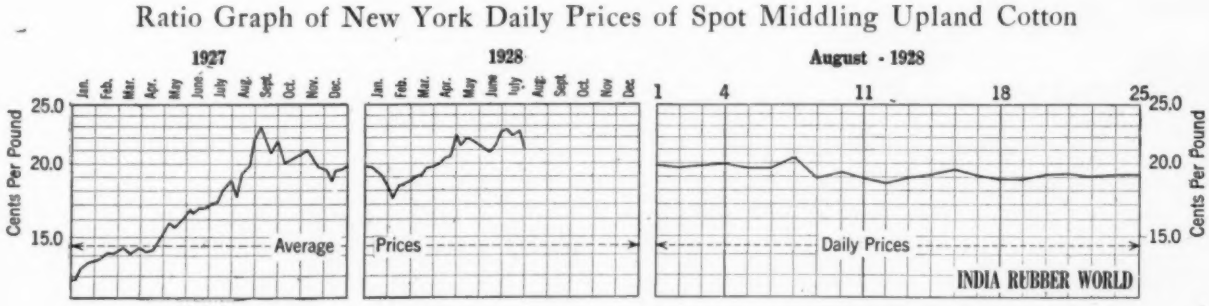
LENO BREAKER

8-oz. Peeler, karded..pound	.45	@
10-oz. Peeler, karded.....	.45	@

CHAFER

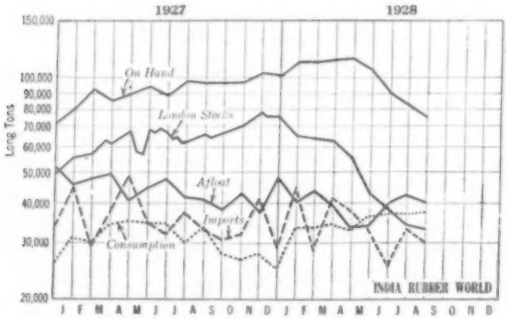
9.5-oz. Peeler, karded.pound	.41	@
12-oz. Peeler, karded.....	.40	@
14-oz. Peeler, karded.....	.45	@

Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton



Imports, Consumption and Stocks

The accompanying graph covers crude rubber importations, consumption and stocks for 1927 and the first 8 months of 1928. Stocks on hand July 31 were 83,242 tons, an increase of 3,242 tons



U. S. Imports, Consumption and Stocks

above the estimate as made June 30. Consumption during July was 37,407 tons or 593 tons under the estimate. Consumption for the months of May, June and July ran very uniform, averaging 37,472 tons per month, owing to the well sustained high schedules for tire production.

London stocks decreased from 35,248 tons on July 21 to 32,815 tons on August 25, a drop of 2,433 tons. July imports were 33,382 tons or 5,382 tons above the estimate at the first of that month.

Consumption for August is expected to exceed that of any previous month this year being estimated at 38,000 tons.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

Twelve Months	Imports Tons	Consumption Tons	Stocks On Hand Tons	Stocks Afloat Tons	London Tons	Singapore and Penang Tons
1925	384,837	389,136	51,000*	48,000*	.....	.....
1926	411,900	366,140	72,510*	52,019*	.....	.....
1927	426,258	370,915	100,130*	47,939*	63,207*	25,868*
1928						
January	46,200	34,403	110,114	41,256	66,283	25,868
February	29,445	33,703	108,955	43,316	62,500	22,867
March	40,894	35,688	114,061	39,324	61,000	20,538
April	37,240	32,779	113,800	33,986	55,000	16,946
May	32,883	37,333	105,356	34,374	43,716	17,687
June	25,792	37,676	90,189	40,000	35,248	18,207
July	33,382	37,407	83,242	42,304	35,445††	18,663
August (est.)	30,000	38,000	75,000	40,000	.....	.....

*December 31.
††August 25.
The 1928 figures, unless otherwise specified, are all as of the first of each month.

Ceylon Rubber Exports

January 1 to April 30, 1928

	Tons
To United Kingdom	3,970.83
Continent	1,285.77
Australia	325.79
America	9,972.97
Egypt	5.00
Africa	4.22
India	5.77
Japan	48.90
Other countries in Asia	3.90
Total	15,623.15
For the same period last year	20,716.74

ANNUAL EXPORTS, 1921-1927

	Tons
For the year 1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

United States Imports of Crude Rubber, Allied Gums and Liquid Latex—By Countries

SIX MONTHS ENDED JUNE, 1928

From	Crude Rubber[1] Pounds	Crude Rubber[1] Value	Liquid Latex Pounds[2]	Liquid Latex Value
Belgium	646,287	$121,449	.....	.....
France	802,734	225,845	.....	.....
Germany	984,451	256,593	.....	.....
Netherlands	644,584	202,771	.....	.....
Switzerland	800	270	.....	.....
United Kingdom	63,088,759	19,760,291	620	$200
Canada	52,612	15,292	.....	.....
Costa Rica	768	192	.....	.....
Nicaragua	32,755	6,730	.....	.....
Panama	4,694	1,141	.....	.....
Jamaica	4,522	1,809	.....	.....
Trinidad and Tobago	13,964	5,445	.....	.....
Bolivia	185,596	34,078	.....	.....
Brazil	14,658,427	3,348,583	.....	.....
Colombia	71,507	20,518	.....	.....
Ecuador	736,998	175,755	.....	.....
British Guiana	213,100	47,736	.....	.....
Surinam	18,622	9,298	.....	.....
Peru	403,699	84,346	.....	.....
Venezuela	168,991	49,062	.....	.....
British India	1,124,128	378,420	.....	.....
British Malaya	264,441,447	84,800,964	1,952,471	621,683
Ceylon	36,130,871	12,340,703	.....	.....
China	22,578	5,693	.....	.....
Java and Madura	43,430,487	14,330,291	41,917	14,894
Other Netherland East Indies	39,382,925	13,264,345	853,763	291,643
Palestine	113,995	36,196	.....	.....
Philippine Is.	183,587	60,644	.....	.....
Australia	42,700	12,370	.....	.....
British Oceania	47,851	13,682	.....	.....
New Zealand	47,218	15,061	.....	.....
Union of South Africa	2,376	235	.....	.....
British West Africa	24,381	5,396	.....	.....
Liberia	137,879	48,258	.....	.....
Other Port. Africa	11,272	1,451	.....	.....
Total	467,877,565	$149,680,913	2,848,771	$928,420

[1]Imports of guayule from Mexico during the six months ended June, 1928, totaled 6,462,952 pounds (2,885 long tons), value $1,655,187. Total rubber imports amounted to 213,031 long tons.

[2]Pounds of dry rubber contained in latex imported. Crude rubber content is taken as three pounds per gallon of latex.

From	Gutta Percha Pounds	Gutta Percha Value	Jelutong Pounds	Jelutong Value	Gutta Siak Pounds	Gutta Siak Value
Germany	7,154	$3,260	.....	.....	.....	.....
United Kingdom	880	116	.....	.....	.....	.....
Brazil	.....	.....	103,594	$23,274	.....	.....
Brit. Malaya	708,103	215,967	6,438,038	1,018,227	473,959	$90,779
Java and Madura	1,016,368	223,040	766,406	119,561	.....	.....
Australia	.....	.....	262,927	43,457	.....	.....
Total	1,732,505	$442,383	7,570,965	$1,204,519	473,959	$90,779

From	Balata Pounds	Balata Value	Scrap and Reclaimed Rubber Pounds	Scrap and Reclaimed Rubber Value
France	.....	.....	1,230,382	$63,238
Germany	.....	.....	448,506	26,455
Italy	.....	.....	442,892	36,681
Netherlands	.....	.....	113,656	2,193
Portugal	.....	.....	4,409	677
Sweden	.....	.....	109,936	1,908
United Kingdom	39,174	$18,439	837,734	40,022
Canada	.....	.....	5,863,573	116,343
Panama	7,810	3,507	9,568	217
Mexico	.....	.....	58,992	840
Trinidad and Tobago	.....	.....	50	2
Cuba	.....	.....	461,568	7,331
Dominican Republic	.....	.....	623	59
Brazil	53,949	21,508	.....	.....
Chile	.....	.....	460	30
Colombia	63,424	15,818	.....	.....
Ecuador	.....	.....	8,000	1,333
British Guiana	6,371	3,058	.....	.....
Surinam	43,325	23,376	.....	.....
Peru	166,887	34,107	.....	.....
Venezuela	62,038	22,130	.....	.....
British India	.....	.....	4,592	92
British Malaya	6,953	1,862	15	5
Japan	.....	.....	1,793	63
Australia	.....	.....	117,133	8,374
British Oceania	.....	.....	400	88
Total	449,931	$143,805	9,714,282	$305,951

Firestone Tires on Horse-Drawn Wagons

In certain sections of New Zealand, where it is still necessary to use horse-drawn vehicles, one company has equipped all its wagons with Firestone tires. According to F. C. Allen, export department representative in that country, the tires assist in making quicker deliveries and the horses can make longer trips.

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	May, 1928		Five Months Ended May, 1928	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*Free*				
Crude rubber	69,568,563	$19,058,672	408,752,029	$136,509,102
Balata	693	251	312,459	116,018
Jelutong or Pontianak	1,520,284	226,064	6,914,654	1,113,367
Gutta percha	224,484	42,762	1,669,414	430,009
Guayule	1,013,100	233,414	5,512,952	1,435,106
Rubber scrap	1,268,718	51,168	8,934,362	365,728
Totals	73,595,842	$19,612,331	432,095,870	$139,969,330
Chicle *dutiable*	1,050,089	$556,631	8,315,400	$4,244,337
MANUFACTURED—*Dutiable*				
Rubber belting	54,529	$27,581	232,127	$129,806
Rubber tires	638	7,927	2,520	54,862
Other manufactures of rubber	.....	125,584	.....	671,917
Totals	55,167	$161,092	234,647	$856,585

EXPORTS OF FOREIGN MERCHANDISE

RUBBER MANUFACTURES				
Crude rubber	5,372,884	$1,386,307	29,379,044	$9,353,344
Balata	32,787	13,481	124,626	50,126
Gutta percha and rubber substitutes and scrap	7,185	1,639	119,667	13,920
Rubber manufactures	.....	13,729	.....	104,944
Totals	5,412,856	$1,415,156	29,623,337	$9,522,334

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	1,992,573	$142,288	9,582,976	$715,826
Scrap and old	3,517,367	180,720	19,340,438	1,098,217
Rubberized piece goods and hospital sheeting *sq. yd.*	224,055	97,661	813,233	396,942
Footwear				
Boots *pairs*	44,213	119,873	297,724	739,409
Shoes *pairs*	145,007	110,659	634,282	506,602
Canvas shoes with rubber soles *pairs*	489,154	342,803	2,237,262	1,625,259
Rubber water bottles and fountain syringes *number*	28,355	17,322	121,660	75,493
Rubber gloves *doz. pairs*	10,403	24,679	39,346	109,424
Other druggists' rubber sundries	.....	41,614	.....	163,260
Rubber balloons *gross*	45,104	52,629	236,102	274,729
Rubber toys and balls	.....	26,632	.....	71,930
Bathing caps *doz.*	18,462	41,130	105,601	229,332
Hard rubber goods				
Electrical hard rubber goods	62,093	17,052	586,256	121,744
Other hard rubber goods	.....	27,162	.....	143,135
Tires				
Casings, automobile *number*	196,308	2,530,388	1,009,008	12,968,754
Tubes, automobile *number*	135,632	323,759	673,144	1,468,516
Other casings and tubes *number*	6,581	11,266	24,662	47,202
Solid tires for automobiles and motor trucks *number*	4,629	159,487	23,380	834,695
Others	118,243	25,579	981,343	223,344
Tire accessories	.....	142,401	.....	732,298
Rubber and friction tape	155,898	50,339	587,962	187,634
Belting	392,092	236,022	2,206,322	1,233,817
Hose	539,029	209,819	3,025,299	1,096,263
Packing	258,827	104,012	1,296,075	567,899
Soles and heels	157,805	220,039	655,767	1,007,686
Thread	139,410	155,781	638,282	720,351
Rubber bands and erasers	85,773	59,270	389,911	271,025
Other rubber manufactures	.....	248,196	.....	1,153,301
Totals	.....	$5,718,582	.....	$28,784,087

Crude Rubber Imports by Customs Districts

	*June, 1928		Six Months Ended *June, 1928	
	Pounds	Value	Pounds	Value
Massachusetts	3,168,244	$871,928	23,972,255	$7,399,826
Buffalo	12,060	2,290	12,060	2,290
New York	50,046,296	10,609,185	395,942,268	126,141,625
Philadelphia	4,857,452	1,709,342	16,398,226	5,536,284
Maryland	1,976,459	468,390	16,940,355	5,655,812
Los Angeles	1,941,688	415,012	13,941,752	4,621,243
San Francisco	77,993	18,913	536,454	161,881
Oregon	11,185	2,789	94,335	31,514
Michigan	33,600	10,080	33,600	10,080
Ohio	11,219	4,508	2,457,124	843,645
St. Louis	.....	.....	280,000	110,749
Wisconsin	.....	.....	56,000	21,982
Colorado	56,000	8,782	270,800	90,781
Totals	62,192,196	$14,121,219	470,935,229	$150,627,712

*Including latex, dry rubber content.

MEXICAN GUAYULE RUBBER INVOICED TO THE UNITED STATES during June, 1928, totaled 782,000 pounds.

United Kingdom Rubber Statistics

IMPORTS

	June, 1928		Six Months Ended June, 1928	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude Rubber From—				
Straits Settlements	7,328,800	£283,028	44,004,200	£2,412,632
Federated Malay States	4,306,000	167,095	23,989,500	1,270,760
British India	910,500	35,716	7,455,000	444,312
Ceylon and Dependencies	1,915,100	76,057	14,203,000	823,030
Other Dutch possessions in Indian Seas	1,549,100	60,805	12,333,300	726,505
Dutch East Indies (except Other Dutch possessions in Indian Seas)	1,798,400	68,221	14,082,400	797,010
Other countries in East Indies and Pacific not elsewhere specified	473,800	18,040	2,000,700	106,779
Brazil	317,200	12,085	2,261,700	122,041
South and Central America (except Brazil)	36,200	1,500	172,900	8,821
West Africa				
French West Africa	300	9	89,100	3,752
Gold Coast	44,000	1,683	296,200	16,034
Other parts of West Africa	107,900	4,280	980,000	51,766
East Africa, including Madagascar	86,200	3,272	689,100	39,070
Other countries	203,500	10,042	906,700	45,867
Totals	19,077,000	£741,833	123,463,800	£6,868,379
Waste and reclaimed rubber	535,600	6,390	4,576,700	61,788
Gutta percha and balata	232,000	18,048	1,839,900	153,702
Rubber substitutes	1,100	32	12,000	353
Totals	19,845,700	£766,303	129,892,400	£7,084,222
MANUFACTURED				
*†‡Tires and tubes				
Pneumatic				
Outer covers	.....	£72,912	.....	£420,111
Inner tubes	.....	16,182	.....	84,291
Solid tires	.....	3,867	.....	29,184
Boots and shoes *doz. pairs*	78,306	123,550	432,795	706,391
Other rubber manufactures	.....	157,704	.....	984,420
Totals	.....	£374,265	.....	£2,224,397

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	2,592,900	£18,661	15,749,600	£129,269
Rubber substitutes	57,700	1,326	264,800	6,703
Totals	2,650,600	£19,987	16,014,400	£135,972
MANUFACTURED				
‡Tires and tubes				
Pneumatic				
Outer covers	.....	£265,295	.....	£1,218,128
Inner tubes	.....	44,270	.....	212,426
Solid tires	.....	18,337	.....	122,407
Boots and shoes *doz. pairs*	31,206	53,384	132,608	208,416
Other rubber manufactures	.....	281,512	.....	1,574,324
Totals	.....	£662,798	.....	£3,335,701

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber				
To—				
Russia	1,502,100	£81,001	6,079,100	£413,614
Sweden, Norway and Denmark	257,800	14,470	1,487,600	98,944
Germany	3,426,100	135,734	22,147,900	1,371,787
Belgium	668,300	33,423	5,221,000	326,315
France	4,027,100	171,346	16,788,200	1,018,115
Spain	209,300	10,402	1,319,000	89,505
Italy	2,011,500	78,520	8,447,800	498,968
Other European countries	370,300	20,603	2,506,800	188,869
United States	13,192,800	776,398	64,025,800	4,166,782
Canada	11,200	427	15,800	998
Other countries	189,200	11,677	779,500	57,128
Totals	25,865,700	£1,334,001	128,818,500	£8,231,025
Waste and reclaimed rubber	11,600	251	114,100	2,076
Gutta percha and balata	41,000	2,585	435,000	36,297
Rubber substitutes	.....	.....	3,700	194
Totals	25,918,300	£1,336,837	129,371,300	£8,269,592
MANUFACTURED				
*‡Tires and tubes				
Pneumatic				
Outer covers	.....	£17,496	.....	£82,039
Inner tubes	.....	1,388	.....	18,064
Solid tires	.....	203	.....	1,879
Boots and shoes *doz. pairs*	1,585	2,385	7,109	12,401
Other rubber manufactures	.....	9,202	.....	71,917
Totals	.....	£30,674	.....	£186,300

*After April 12, 1927, tires and tubes imported or exported with complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from September 29, 1915, until August 1, 1924, inclusive, and after July 1, 1925, Commercial vehicles, parts and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡Tires and tubes included prior to April 12, 1927.

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
JULY 15. By "Pres. Pierce," Far East.	
H. A. Astlett & Co.	†200
Littlejohn & Co., Inc.	†500
JULY 16. By "American Farmer," London.	
Baird Rubber & Trading Co., Inc.	1,002
Bierrie & Co., Inc.	144
JULY 16. By "Carmania," Europe.	
General Rubber Co.	433
JULY 16. By "Minnesota," London.	
Robert Badenhop Corp.	130
Baird Rubber & Trading Co., Inc.	1,940
Bierrie & Co., Inc.	1,470
General Rubber Co.	600
Littlejohn & Co., Inc.	350
The Meyer & Brown Corp.	1,07*
Rogers Brown & Crocker Bros., Inc.	156
JULY 16. By "Olivebank," Far East.	
Bierrie & Co., Inc.	89
H. Muehlstein & Co., Inc.	350
JULY 17. By "Scythia," London.	
Bierrie & Co., Inc.	149
General Rubber Co.	41
JULY 18. By "Mississippi," London.	
Baird Rubber & Trading Co., Inc.	*291
JULY 19. By "City Eastbourne," Far East.	
H. A. Astlett & Co.	868
Baird Rubber & Trading Co., Inc.	50
Bierrie & Co., Inc.	150
General Rubber Co.	1,055
Haldane & Co., Inc.	260
Hood Rubber Co.	332
Littlejohn & Co., Inc.	1,055
The Meyer & Brown Corp.	1,293
The Meyer & Brown Corp.	*50
H. Muehlstein & Co., Inc.	850
Poel & Kelly, Inc.	650
Rogers Brown & Crocker Bros., Inc.	850
Chas. T. Wilson Co., Inc.	755
JULY 20. By "Mahanada," Far East.	
Robert Badenhop Corp.	50
Chas. T. Wilson Co., Inc.	108
JULY 21. By "Chickasaw," London.	
General Rubber Co.	**17,717
JULY 23. By "American Merchant," London.	
Bierrie & Co., Inc.	266
JULY 23. By "Cedarbank," Far East.	
H. A. Astlett & Co.	523
Robert Badenhop Corp.	702
Bierrie & Co., Inc.	30
General Rubber Co.	860
Littlejohn & Co., Inc.	703
The Meyer & Brown Corp.	160
H. Muehlstein & Co., Inc.	150
Rogers Brown & Crocker Bros., Inc.	361
Rogers Brown & Crocker Bros., Inc.	*50
JULY 23. By "Minnetonka," London.	
Bierrie & Co., Inc.	152
Littlejohn & Co., Inc.	86
The Meyer & Brown Corp.	1,016
JULY 23. "Pres. Van Buren," Far East.	
H. A. Astlett & Co.	2,319
Robert Badenhop Corp.	365
Baird Rubber & Trading Co., Inc.	400
Bierrie & Co., Inc.	250
General Rubber Co.	741
Haldane & Co., Inc.	818
Hood Rubber Co.	*66
Littlejohn & Co., Inc.	5,047
The Meyer & Brown Corp.	913
H. Muehlstein & Co., Inc.	550
Poel & Kelly, Inc.	110
Raw Products Co.	250
Rogers Brown & Crocker Bros., Inc.	415
Rogers Brown & Crocker Bros., Inc.	*210
Chas. T. Wilson Co., Inc.	950
JULY 25. By "Port Victor," London.	
Bierrie & Co., Inc.	776
The Meyer & Brown Corp.	532
JULY 25. By "Rexmore," London.	
Baird Rubber & Trading Co., Inc.	253
Bierrie & Co., Inc.	791
JULY 26. By "Steel Age," Far East.	
General Rubber Co.	104
JULY 27. By "Rotterdam," Europe.	
General Rubber Co.	107
JULY 27. By "Stadsdyk," Far East.	
H. A. Astlett & Co.	1,880
Robert Badenhop Corp.	288
Baird Rubber & Trading Co., Inc.	145
Bierrie & Co., Inc.	100
General Rubber Co.	2,500
Littlejohn & Co., Inc.	432
The Meyer & Brown Corp.	223
H. Muehlstein & Co., Inc.	510
Poel & Kelly, Inc.	164
Rogers Brown & Crocker Bros., Inc.	755
Chas. T. Wilson Co., Inc.	540
JULY 29. By "Bintang," Far East.	
Littlejohn & Co., Inc.	†789
Poel & Kelly, Inc.	†198
JULY 29. By "Caronia," London.	
Chas. T. Wilson Co., Inc.	40
JULY 30. By "Adrastus," Far East.	
H. A. Astlett & Co.	1,871
Robert Badenhop Corp.	1,754
Baird Rubber & Trading Co., Inc.	200
Bierrie & Co., Inc.	300
N. Diamond & Co., Inc.	300
General Rubber Co.	5,580
Haldane & Co., Inc.	208
Littlejohn & Co., Inc.	4,200
The Meyer & Brown Corp.	2,211
H. Muehlstein & Co., Inc.	800
Poel & Kelly, Inc.	440
Rogers Brown & Crocker Bros., Inc.	993
Rogers Brown & Crocker Bros., Inc.	*436
Chas. T. Wilson Co., Inc.	696
JULY 30. By "Albert Ballin," Europe.	
The Meyer & Brown Corp.	342
JULY 30. By "American Banker," London.	
Baird Rubber & Trading Co., Inc.	146
Bierrie & Co., Inc.	142
JULY 31. By "Laconia," London.	
Baird Rubber & Trading Co., Inc.	482
The Meyers & Brown Corp.	342
JULY 31. By "Minnekahda," London.	
Baird Rubber & Trading Co., Inc.	96
Bierrie & Co., Inc.	141
Haldane & Co., Inc.	50
Littlejohn & Co., Inc.	80
The Meyer & Brown Corp.	932
Poel & Kelly, Inc.	20
JULY 31. By "Pres. Taft," Far East.	
Littlejohn & Co., Inc.	†2,614
The Meyer & Brown Corp.	†80
AUGUST 2. By "City of Perth," Far East.	
Robert Badenhop Corp.	56
Baird Rubber & Trading Co., Inc.	224
General Rubber Co.	109
Hood Rubber Co.	*80
Littlejohn & Co., Inc.	2,052
The Meyer & Brown Corp.	112
Rogers Brown & Crocker Bros., Inc.	*50
Chas. T. Wilson Co., Inc.	339
AUGUST 2. By "Nortonian," Europe.	
Littlejohn & Co., Inc.	311
AUGUST 2. By "Wythville," Far East.	
Robert Badenhop Corp.	126
AUGUST 5. By "Silverbeech," Far East.	
H. A. Astlett & Co.	2,223
Robert Badenhop Corp.	1,197
N. Diamond & Co., Inc.	50
General Rubber Co.	9,634
Haldane & Co., Inc.	371
Littlejohn & Co., Inc.	2,861
The Meyer & Brown Corp.	742
H. Muehlstein & Co., Inc.	120
Poel & Kelly, Inc.	310
Rogers Brown & Crocker Bros., Inc.	316
Chas. T. Wilson Co., Inc.	454
AUGUST 6. "American Shipper," Europe.	
The Meyer & Brown Corp.	139
AUGUST 6. By "Bolton Castle," Far East.	
H. A. Astlett & Co.	1,591
Robert Badenhop Corp.	746
Baird Rubber & Trading Co., Inc.	100
General Rubber Co.	1,818
Haldane & Co., Inc.	382
Hood Rubber Co.	131
Littlejohn & Co., Inc.	3,385
The Meyer & Brown Corp.	1,714
H. Muehlstein & Co., Inc.	1,800
Poel & Kelly, Inc.	350
Rogers Brown & Crocker Bros., Inc.	311
Chas. T. Wilson Co., Inc.	452
AUGUST 6. "Burgerdyk," Europe.	
Littlejohn & Co., Inc.	250
AUGUST 6. By "London Corporation," Europe.	
The Meyer & Brown Corp.	354
AUGUST 6. By "Minnewaska," London.	
Baird Rubber & Trading Co., Inc.	353
General Rubber Co.	56
Littlejohn & Co., Inc.	100
The Meyer & Brown Corp.	380
AUGUST 6. By "Silverelm," Far East.	
H. A. Astlett & Co.	†488
Robert Badenhop Corp.	†180
General Rubber Co.	†300
Littlejohn & Co., Inc.	2,593
The Meyer & Brown Corp.	†380
AUGUST 6. By "Tuscania," London.	
General Rubber Co.	681
Littlejohn & Co., Inc.	237
Chas. T. Wilson Co., Inc.	175
AUGUST 7. By "Easterling," Far East.	
H. A. Astlett & Co.	330
Littlejohn & Co., Inc.	330
The Meyer & Brown Corp.	400
H. Muehlstein & Co., Inc.	400
Rogers Brown & Crocker Bros., Inc.	208
Rogers Brown & Crocker Bros., Inc.	*66
Chas. T. Wilson Co., Inc.	74
AUGUST 7. By "Manaar," Far East.	
Haldane & Co., Inc.	100
H. Muehlstein & Co., Inc.	1,350
Chas. T. Wilson Co., Inc.	398
AUGUST 7. By "Pres. Hayes," Far East.	
H. A. Astlett & Co.	1,124
Robert Badenhop Corp.	100
General Rubber Co.	1,869
Haldane & Co., Inc.	130
Haldane & Co., Inc.	*150
Littlejohn & Co., Inc.	4,033
The Meyer & Brown Corp.	920
H. Muehlstein & Co., Inc.	480
Poel & Kelly, Inc.	437
Rogers Brown & Crocker Bros., Inc.	481
Chas. T. Wilson Co., Inc.	513
AUGUST 8. By "City of Birmingham," Far East.	
H. A. Astlett & Co.	409
Robert Badenhop Corp.	855
Baird Rubber & Trading Co., Inc.	451
Bierrie & Co., Inc.	725
General Rubber Co.	581
Haldane & Co., Inc.	313
Littlejohn & Co., Inc.	3,759
The Meyer & Brown Corp.	819
The Meyer & Brown Corp.	*51
H. Muehlstein & Co., Inc.	1,400
Poel & Kelly, Inc.	631
Chas. T. Wilson Co., Inc.	254
AUGUST 11. By "Japanese Prince," Far East.	
H. A. Astlett & Co.	1,092
Robert Badenhop Corp.	1,139
Baird Rubber & Trading Co., Inc.	100
Bierrie & Co., Inc.	600
N. Diamond & Co., Inc.	100
General Rubber Co.	2,844
Haldane & Co., Inc.	429
Littlejohn & Co., Inc.	4,307
The Meyer & Brown Corp.	385
H. Muehlstein & Co., Inc.	380
Poel & Kelly, Inc.	350
Rogers Brown & Crocker Bros., Inc.	850
Rogers Brown & Crocker Bros., Inc.	*100
Chas. T. Wilson Co., Inc.	926
AUGUST 11. By "Volendam," Far East.	
Haldane & Co., Inc.	50
The Meyer & Brown Corp.	80
H. Muehlstein & Co., Inc.	150
AUGUST 12. By "Carmania," London.	
H. A. Astlett & Co.	100
General Rubber Co.	3,109
Littlejohn & Co., Inc.	100
Chas. T. Wilson Co., Inc.	57
AUGUST 12. By "Pres. Jefferson," Far East.	
H. A. Astlett & Co.	†320
Baird Rubber & Trading Co., Inc.	†150
The Meyer & Brown Corp.	†200
Poel & Kelly, Inc.	†200
AUGUST 13. By "Minnesota," London.	
Baird Rubber & Trading Co., Inc.	2,350
Bierrie & Co., Inc.	3,584
General Rubber Co.	1,412
Littlejohn & Co., Inc.	1,316
The Meyer & Brown Corp.	3,233
AUGUST 14. By "Scythia," London.	
Bierrie & Co., Inc.	142
General Rubber Co.	198
AUGUST 15. By "Kasama," Far East.	
Hood Rubber Co.	*160

Africans

JULY 30. By "Laconia," Africa.	
Littlejohn & Co., Inc.	20
JULY 30. By "Tomalva," Antwerp.	
Hood Rubber Co.	*842
AUGUST 5. By "Samaria," Europe.	
Littlejohn & Co., Inc.	10
AUGUST 15. By "Sacandaga," Antwerp.	
Hood Rubber Co.	*202

Balata

JULY 24. By "Francis," Peru.	
Paul Bertuch & Co., Inc.	67
AUGUST 8. By "Swinburne," Brazil.	
Paul Bertuch & Co., Inc.	66

Rubber Latex

JULY 16. By "Carmania," Europe.	
General Rubber Co.	gal. 144,491
JULY 23. By "Pres. Van Buren," Far East.	
Rogers Brown & Crocker Bros., Inc., gal.	*672
AUGUST 5. By "Silverbeech," Far East.	
General Rubber Co.	gal. 65,528

* Arrived at Boston.
† Arrived at Los Angeles.
** Arrived at Philadelphia.

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
JULY 17. By "Southern Cross," Bolivia.					
Paul Bertuch & Co., Inc.	115	...	...	...	...
JULY 24. By "Francis," Brazil.					
H. A. Astlett & Co.	49	1	4	201	...
Paul Bertuch & Co., Inc.	439	...	...	...	...
Littlejohn & Co., Inc.	346	...	18	66	...
AUGUST 8. By "Swinburne," South America.					
H. A. Astlett & Co.	66	...	100	...	...
Paul Bertuch & Co., Inc.	766	...	...	163	...
Littlejohn & Co., Inc.	788	...	65	478	...

United States Crude and Waste Rubber Imports for 1928 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1928	Total 1927	Balata	Miscellaneous	Waste
January ....tons	43,668	1,580	433	126	435	1	46,243	45,827	120	1,292	248
February	27,852	756	125	125	587	..	29,445	27,701	58	517	310
March	37,545	2,430	72	92	755	..	40,894	35,054	154	741	830
April	36,108	573	15	20	524	..	37,240	48,632	202	888	18
May	31,564	849	14	5	451	..	32,883	36,285	71	923	142
June	24,752	582	25	9	424	..	25,792	33,142	14	727	165
July	32,536	585	11	62	188	..	33,382	38,416	108	895	33
Total, seven months, 1928....tons	234,025	7,355	695	439	3,364	1	245,879	.....	727	5,983	1,746
Total, seven months, 1927....tons	249,169	10,844	1,405	734	2,885	21	.....	265,057	635	7,631	3,910

Compiled from statistics supplied by the Rubber Association of America, Inc.

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, Malaya House, 57 Charing Cross, London S. W. 1, England, states that the amount of rubber exported from British Malaya in July last totaled 30,405 tons. The amount of rubber reported was 13,383 tons, of which 10,653 tons were declared as wet rubber. The following are comparative statistics:

	1927 Gross Exports Tons	1927 Foreign Imports Tons	1928 Gross Exports Tons	1928 Foreign Imports Tons
January	34,946	14,995	27,731	16,618
February	27,528	11,697	28,813	12,911
March	41,346	17,462	27,813	10,508
April	29,041	13,069	20,029	9,335
May	31,393	15,491	26,403	10,350
June	32,607	14,706	22,930	16,168
July	23,947	12,697	30,405	13,383
Totals	220,808	100,117	184,124	89,273

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all parts of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of June and July, 1928:

	June, 1928 Tons	July, 1928 Tons
United Kingdom	2,947	3,768
United States	15,617	21,548
Continent of Europe	1,815	2,848
British Possessions	515	686
Japan	2,003	1,516
Other foreign countries	33	39
Totals	22,930	30,405

Plantation Rubber Exports from Malaya*

January 1 to May 31, 1928

	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	2,113.69	2,849.91	2,351.30
British Possessions	1,429.77	120.00	90.00
Continent of Europe	3,878.80	577.67	1,132.11
United States	60,638.35	10,162.49	2,990.09
Japan	6,642.00	866.50	969.00
Other countries	97.83	.....	.....
Totals	74,800.44	14,576.57	7,532.50

*Excluding all foreign transhipment.

London Stocks, June, 1928

LONDON	Landed for June Tons	Delivered for June Tons	Stocked June 30 1928 Tons	1927 Tons	1926 Tons
Plantation	7,285	13,119	38,638	63,709	23,776
Other grades	.....	5	84	128	153
LIVERPOOL					
Plantation	†528	†447	†2,335	†2,985	†1,028
Total tons, London and Liverpool	7,813	13,571	41,057	66,822	24,957

†Official returns from the six recognized public warehouses.

World Rubber Production—Net Exports

Long Tons—1928

British Malaya:	Feb.	March	April	May	June	July
Gross exports	28,813	27,813	20,029	26,403	22,930	30,405
Imports	12,911	10,508	9,335	10,350	16,168	13,383
Net	15,902	17,305	10,694	16,053	6,762	17,022
Ceylon	4,353	3,460	3,460	3,125	3,125	44,798
India and Burma	1,081	775	789	654	963	.....
Sarawak	667	645	630	842	926	905
B. N. Borneo	*500	*500	*500	*500	*500	*500
Siam	536	269	258	241	451	366
Java and Madura	4,052	3,999	3,993	4,943	5,419	.....
Sumatra East Coast	6,757	5,826	5,040	5,355	5,863	.....
Other N. E. Indies	8,635	9,690	5,538	10,382	13,623	.....
French Indo-China	723	613	518	619	902	744
Amazon Valley	1,612	2,750	1,014	2,062	1,399	1,264
Other America	199	204	239	51	.....	.....
Mexican Guayule	489	575	512	452	424	192
Africa	588	432	572	.....	.....	.....
Total	46,094	47,043	33,757	.....	.....	.....

* Estimated.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

World Rubber Absorption—Net Imports

Long Tons 1928

	Jan.	Feb.	March	April	May	June
Australia	802	616	918	832	655	348
Belgium	589	599	816	575	746	743
Canada	2,290	2,553	2,989	1,938	2,180	2,632
Czechoslovakia	376	297	398	159	213	.....
Denmark	29	43	33	23	61	28
Finland	78	48	78	63	71	58
France	1,764	2,526	1,902	2,204	3,210	.....
Germany	2,485	2,984	3,521	2,719	2,944	2,968
Italy	760	437	763	1,115	1,095	.....
Japan	1,361	1,258	1,707	2,353	2,306	.....
Netherlands	52	98	95	280	209	133
Norway	65	67	56	60	82	.....
Russia	995	159	1,468	926	744	710
Spain	335	296	497	304	.....	.....
Sweden	89	149	184	193	271	227
United Kingdom	1,921	3,143	3,179	*2,280	*5,325	*3,031
United States	37,123	30,926	36,970	35,686	28,659	25,143
U. S. (Guayule)	432	489	575	512	452	424
Total	51,543	46,688	56,149	52,222	.....	.....

* Excess of Reexports over Imports.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Motorcycles Increase

There was a gain of over 16 per cent in the number of motorcycles registered throughout the world during 1927. According to latest revised figures, as of Jan. 1, 1928, there were 1,944,303 machines in operation, of which Europe was the greatest consumer, its registrations numbering over 80 per cent.

THE UNITED STATES MANUFACTURES ABOUT ONE-SIXTH, OR 17.3 per cent, of the total number of motorcycles in use in the world.

Rubber Questionnaire Second Quarter 1928[1]

Reclaimed Rubber	Inventory at End of Quarter (Long Tons)	Production (Long Tons)	Shipments (Long Tons)	Consumption (Long Tons)
Reclaimers solely (7)	3,709	21,049	21,589	.....
Manufacturers who also reclaim (23)	7,173	30,060	10,657	20,861
Other manufacturers (70)	4,577	.....	.....	17,710
Totals	15,459	51,109	32,246	38,571

Scrap Rubber	Inventory (Long Tons)	Consumption (Long Tons)	Due on Contract (Long Tons)
Reclaimers solely (7)	30,195	39,659	21,424
Manufacturers who also reclaim (20)	20,846	25,728	11,232
Other manufacturers (13)	477	.....	.....
Totals	51,518	65,387	32,656

TONS OF RUBBER CONSUMED IN RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS

Products	Crude Rubber Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	62,197	$159,410,000
Automobile and motor truck pneumatic tubes	14,035	23,640,000
Motorcycle tires (casings and tubes)	133	463,000
Bicycle tires (single tubes, casings and tubes)	233	604,000
Aeroplane casings and tubes	28	71,000
Solid and cushion tires	2,928	6,456,000
All other solid tires	369	1,391,000
Tire sundries and repair materials	1,400	5,044,000
Totals	81,323	$197,079,000

Products	Crude Rubber Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Other Rubber Products:		
Mechanical rubber goods	4,210	$26,679,000
Boots and shoes	4,052	18,591,000
Insulated wire and insulating compounds	750	7,039,000
Druggists' sundries, medical, surgical rubber goods	363	2,275,000
Stationers' rubber goods	319	712,000
Bathing apparel	170	1,115,000
Rubber clothing	189	1,077,000
Automobile fabrics	226	2,585,000
Other rubberized fabrics	377	1,694,000
Hard rubber goods	372	1,308,000
Heels and soles	1,439	5,406,000
Rubber flooring	256	1,234,000
Sporting goods, toys and novelties	386	2,444,000
Miscellaneous, not included in any of the above items	788	3,283,000
Totals	13,897	$75,442,000
Grand totals—all products	95,220	$272,521,000

INVENTORY OF RUBBER IN THE UNITED STATES AND AFLOAT

On Hand	Plantation (Long Tons)	Para (Long Tons)	All Other (Long Tons)	Totals (Long Tons)
Manufacturers	72,794	2,040	2,298	77,132
Importers and dealers	8,742	820	1,077	10,639
Totals on hand	81,536	2,860	3,375	87,771
Afloat				
Manufacturers	12,149	.....	.....	12,149
Importers and dealers	26,086	233	10	26,329
Totals afloat	38,235	233	10	38,478

[1]Number of rubber manufacturers that reported data was 158; crude rubber importers and dealers, 46; reclaimers (solely), 7; total daily average number of employes on basis of third week of April, 1928, was 157,685.

It is estimated that the crude rubber consumption figures are 92 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

Hungarian Rubber Mfg. Co.

Since 1926, the greater part of the Hungarian Rubber Mfg. Co. (Hungaria Gummiwarenfabrik A.-G.) shares have been held by an Austrian financial group amply provided with capital. As a result, the share capital could be increased six-fold so that the concern now has the second largest share capital in Hungary. The factory was considerably enlarged and further extensions are constantly being made.

The firm produces and exports rubberized fabric, raincoats, rubber soled canvas shoes, bathing caps, shoes and belts, baby pants, hospital sheeting, technical goods, toy balls, sanitary goods, gloves, nipples and the like.

Tire Production Statistics

	High Pressure Pneumatic Casings: Cord Inventory	Cord Production	Cord Total Shipments	Fabric Inventory	Fabric Production	Fabric Total Shipments
1927	.....	21,527,278	21,733,962	.....	766,581	1,198,549
1928						
January	3,605,064	1,684,750	1,496,047	200,322	56,218	60,404
February	4,394,561	1,697,498	1,244,812	222,655	53,220	28,719
March	4,355,309	1,564,346	1,302,644	235,673	33,168	28,431
April	4,331,499	1,307,759	1,347,854	223,274	16,198	27,523
May	4,152,775	1,404,097	1,570,710	195,886	6,787	36,567
June	3,362,861*	1,345,857	1,812,907	171,349*	15,107	38,401

	High Pressure Inner Tubes: Inventory	Production	Total Shipments	Balloon Inner Tubes: Inventory	Production	Total Shipments
1927	.....	27,398,535	29,528,108	.....	25,718,529	25,143,821
1928						
January	5,328,071	1,669,894	2,014,744	4,408,235	2,411,124	2,539,535
February	5,941,626	1,949,539	1,470,668	5,046,021	3,221,756	2,602,362
March	6,071,983	1,740,238	1,442,162	5,782,551	3,683,017	2,856,342
April	6,044,843	1,628,576	1,459,826	6,434,307	3,366,957	2,815,778
May	6,220,912	1,680,621	1,713,411	7,055,801	3,695,296	3,011,432
June	5,558,455*	1,661,897	2,168,337	7,311,204*	3,553,191	3,184,056

	Balloon Casings: Inventory	Production	Total Shipments	Solid and Cushion Tires: Inventory	Production	Total Shipments
1927	.....	26,037,452	25,111,903	.....	558,030	558,007
1928						
January	3,656,537	2,377,299	2,489,391	161,329	36,279	33,797
February	4,173,493	3,021,548	2,500,013	156,790	36,328	38,715
March	4,700,534	3,516,480	2,967,476	156,424	42,950	44,665
April	4,983,023	3,309,351	2,983,454	154,477	43,255	42,145
May	5,419,093	3,658,349	3,235,236	153,205	46,606	47,604
June	5,587,566*	3,658,508	3,486,748	153,925*	48,614	48,426

	Cotton and Rubber Consumption, Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds
1927	177,979,818	463,661,466
1928		
January	16,039,819	43,709,438
February	16,923,607	46,468,050
March	18,853,824	48,897,275
April	18,310,791	43,700,630
May	19,167,606	51,061,030
June	19,646,494	53,158,592

*As of June 30, 1928.

Rubber Association figures representing 75 per cent of the industry.

Footwear Exports Gain

The United States is the largest supplier of rubber footwear to the world and last year it sold abroad 8,140,601 pairs valued at $7,072,937, according to the Department of Commerce. The nearest competitor was Canada, which exported 6,670,048 pairs valued at $5,701,115. France was third and the United Kingdom fourth.

A decline of 4 per cent in volume, or 337,354 pairs, in rubber footwear exports took place as compared with 1926, while Canada increased its exports by 39,985 pairs.

The United States exports during the first six months of 1928 are about 50 per cent of the entire year 1927, while Canadian exports for the corresponding period are 63 per cent. This large increase places Canada as the leader during the first half of 1928, exceeding the United States by 72,435 pairs. The excess is in canvas rubber-soled shoes. On the other hand, United States exports of rubber boots and shoes have exceeded those of Canada by a substantial margin.

Rubber Flowers in the Movies

Rubber flowers are fast replacing natural ones in motion picture production. Their next extensive use will be in a Lasky feature, "Sins of the Fathers," with a European setting and starring Emil Jannings. The rubber floral display will be chiefly in a big restaurant scene where diners buy blooms from tip-scorning waiters. The flowers are remarkably artistic replicas of the real articles, and the rubber material is preferred by the screen folk because it can stand rough handling and will last indefinitely. They are made in many types and find ready sale at not only the Hollywood studios but in the high class department stores in many cities on the Coast.

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44 Beaver Street **New York City**

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Telephone Main 3799

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CRUDE RUBBER

Manufacturers' inquiry solicited and will receive prompt attention

Standard Warranty *for* Pneumatic Casings *and* Tubes

"Every pneumatic tire of our manufacture bearing our name and serial number is warranted by us against defects in material and workmanship *during the life of the tire* to the extent that if any tire fails because of such defect, we will either repair the tire or make a reasonable allowance on the purchase of a new tire."

The Tire Manufacturing Members of The RUBBER INSTITUTE Inc.

THIS broad warranty against tire defects, unlimited as to mileage or time, is the most constructive guarantee of service ever offered the public.

Director General, THE RUBBER INSTITUTE, INC.

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THE BADGER RUBBER WORKS
THE BRUNSWICK TIRE CORP.
THE COLUMBUS TIRE & RUBBER CO.
COMBINATION RUBBER MFG. CO.
THE COOPER CORPORATION
CORDUROY TIRE COMPANY OF MICHIGAN
THE DENMAN CORD TIRE CO.
THE DIAMOND RUBBER CO., INC.
DUNLOP TIRE & RUBBER CO.
EMPIRE TIRE & RUBBER CORP. OF N. J.
THE FALLS RUBBER COMPANY, INC.
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HOOD RUBBER COMPANY
INDIA TIRE & RUBBER COMPANY
KELLY-SPRINGFIELD TIRE COMPANY
LAMBERT TIRE & RUBBER CO.
LEE TIRE & RUBBER COMPANY
LEVIATHAN TIRE & RUBBER CO.
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THE MILLER RUBBER COMPANY
THE MOHAWK RUBBER COMPANY
MONARCH, THE HARTVILLE RUBBER CO.
MURRAY RUBBER COMPANY
THE NORTHERN RUBBER COMPANY
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STANDARD FOUR TIRE COMPANY
UNITED STATES RUBBER COMPANY

Members of THE RUBBER INSTITUTE, Incorporated

—a declaration that enables the manufacturers of over 95% of the production in the country to stand squarely behind the quality and serviceability of their products, as they wish to stand.

THE tire industry has taken great steps forward in the past decade.

Tire quality has been improved immeasurably; tire prices have been reduced to the lowest levels in history.

And now the industry has taken another great forward step.

The manufacturers of 95% of the tires made in the United States guarantee tires bearing their names and serial numbers against defects for the life of the tire.

What an improvement this is over the old days of the now out-worn "definite mileage guarantee."

The era of the mileage guarantee came to an end when users realized that good tires are made of rubber and cotton—not printed promises.

They discovered that "there are no miles in a bottle of ink."

They discovered that you cannot put mileage into tires by written guarantees—it must be built in. No mileage guarantee will hold the tread to the carcass:—nothing but craftsmanship does that.

They discovered that no mileage guarantee will toughen the rubber or strengthen the cotton cord:—only the know-how of experienced tire builders does that.

They discovered that no mileage guarantee will extend the life of a tire to its utmost capacity:—only good driving and care for your tires does that.

On the other hand, car owners found that the definite mileage guarantee had these failings—

1 It benefited the driver who misused his tires and misrepresented his mileage, at the cost of the honest and careful driver who did not abuse his tires, and who was truthful in stating his mileage, or honest in admitting he did not know his mileage.

2 It put a premium upon heedless driving by removing the penalty for traveling with tires under-inflated or wheels out of line.

3 Its cost was a buried expense that bore on the user of the tires without adding any commensurate value.

* * *

The first year following the elimination of the definite mileage guarantee, over thirteen million dollars was saved by doing away with adjustments against neglect and abuse of the careless driver, and was put back into the product *for the benefit of all drivers alike.*

The industry simply converted non-productive cost into good sound rubber and cotton. Every user benefited equally; tire prices came down; tire quality went up. *Today the American tire user is enjoying the lowest-cost tire miles in the history of the world.*

The high quality of the present day tires has made possible the prevailing standard tire warranty, extending over the life of the tire—*the broadest and most constructive guarantee of service that can be written.*

THE RUBBER INSTITUTE, *Inc.*

—an association of manufacturers organized "to promote in the industry a mutual confidence and a high standard of business ethics; to eliminate trade abuses; to promote sound economic business customs and practices; to foster wholesome competition . . . and thus generally to promote the service of the industry to the public welfare."

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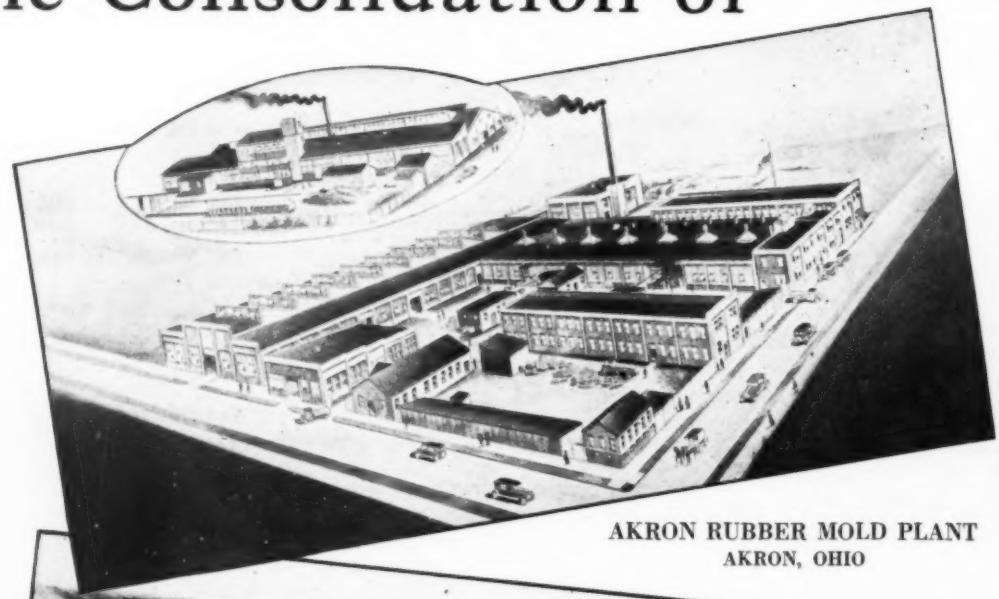
The Consolidation of



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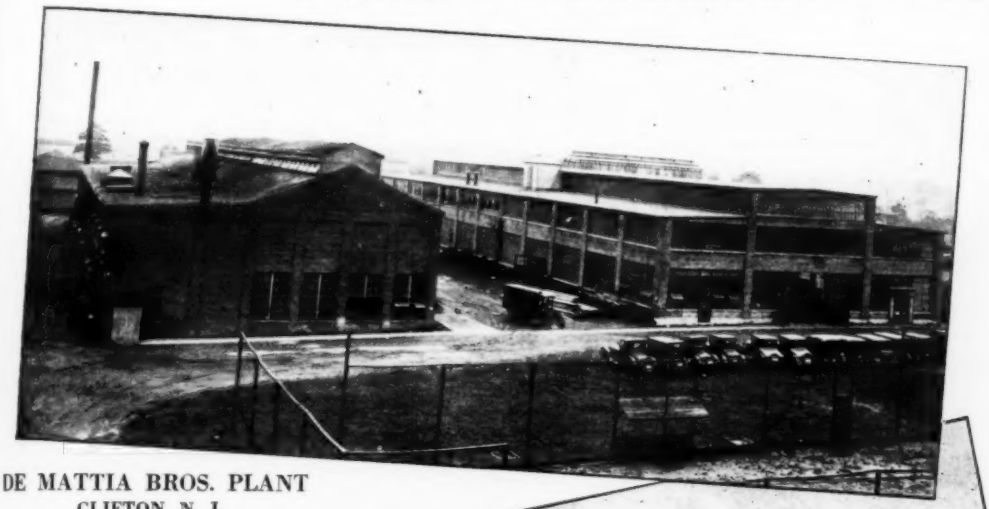

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Uniformity of color and fineness insured by a water grinding and floating process

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CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

FACTORY MANAGER OR SUPERINTENDENT, technical graduate, twelve years' experience in the manufacturing of tires and tubes, thorough knowledge of compounding, design and all factory operations. At present employed in same capacity. Address Box No. 9301, care of INDIA RUBBER WORLD.

COLLEGE GRADUATE WITH OVER TEN YEARS' PRACTICAL experience in factory, office and selling, perfectly familiar with the manufacture of rubber footwear and sundries. Open for a proposition after October 1. Address Box No. 9309, care of INDIA RUBBER WORLD.

POSITION WANTED AS SUPERINTENDENT OR ASSISTANT IN tire and tube factory. Fifteen years of detail and practical experience in various departments. Also familiar with big plant methods. Ten years with present concern. Best of references including that of present employer. Age thirty-five. Address Box No. 9311, care of INDIA RUBBER WORLD.

RUBBER EXPERT AND TECHNOLOGIST, WITH BROAD PRACtical and theoretical experience, is open for engagement as superintendent or in similar capacity. Address Box No. 9312, care of INDIA RUBBER WORLD.

EXPERIENCED RUBBER MANUFACTURER DESIRES TO ASSOciate with active organization where results are expected and appreciated. Several years devoted exclusively to compounds and factory efficiency, familiar with all details of office and selling requirements. Address Box No. 9313, care of INDIA RUBBER WORLD.

OPEN FOR POSITION. MANY YEARS' RUBBER EXPERIENCE with reputable company. Successful designer of labor saving machinery. Factory and production management. Can produce low costs. Address Box No. 9314, care of INDIA RUBBER WORLD.

SALESMAN, AT PRESENT EMPLOYED SPECIALIZING ON HIGH grade mechanicals, is open for position as factory representative in New England. Past experience covers footwear, clothing, druggists' sundries and mechanicals, also branch management. Best of recommendations. Address Box No. 9316, care of INDIA RUBBER WORLD.

COMPETENT SUPERINTENDENT OR PRODUCTION FOREMAN with long experience in manufacturing all kinds of insulated wires and cables, especially rubber covered wires; having excellent mechanical ability and expert knowledge of compounding, wishes permanent connection with reliable firm. Address Box No. 9327, care of INDIA RUBBER WORLD.

MECHANICAL ENGINEER IS OPEN FOR POSITION AS MASTER mechanic, plant engineer or maintenance engineer. Five years' technical education, twenty-five years' practical experience in rubber factories manufacturing all kinds of rubber goods, capable of laying out, installing and maintaining entire plant, expert on operating and boiler economy. Gold seal license for Massachusetts and New Jersey. Address Box No. 9321, care of INDIA RUBBER WORLD.

CHEMIST, UNIVERSITY GRADUATE, SEVENTEEN YEARS' EXperience in laboratory and factory, in various lines of the rubber industry, at present employed as superintendent of factory manufacturing mechanical rubber goods, is looking for new connection with high-class concern. Address Box No. 9322, care of INDIA RUBBER WORLD.

CHEMICAL ENGINEER, EXPERIENCED IN COMPOUNDING REsearch, testing, factory control and general rubber technology. Desires new connections. Address Box No. 9324, care of INDIA RUBBER WORLD.

CHEMIST, B. S., MARRIED, AGE TWENTY-NINE, FIVE YEARS' experience on organic synthesis and rubber accelerators. Research experience on factory and production problems and process development. Excellent references. Address Box No. 9325, care of INDIA RUBBER WORLD.

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OF ALL DESCRIPTIONS

Brazil Manicoba, and Sheet Rubber, Crude and Washed, Our Specialty.

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I would like to have a complete file of INDIA RUBBER WORLD to keep at my residence. Enclosed please find $3.00 in full payment for the next 12 issues which please send to my home address as follows:

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(*Advertisements continued on page* 132)

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Especially Adapted to
Hard Rubber and Insulated Wire

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Testing, formulas, costs, experimental work on all classes of rubber products. Litigation.

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Classified Advertisements

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SALESMAN: IF YOU WANT MORE MONEY ON YOUR PRESENT job, you can get it, if you sell rubber manufacturers, by selling them a staple article backed by national advertising. Liberal commission, some exclusive territory to right man. Address Box No. 9302, care of INDIA RUBBER WORLD.

CLAY SALESMAN WANTED WHO HAS WIDE ACQUAINTance among rubber and allied industries and can sell high grade pulverized clays. State age, experience, salary expected and full information. Address Box No. 9306, care of INDIA RUBBER WORLD.

WANTED: EXPERIENCED PRODUCTION SUPERINTENDENT for tire department of large western rubber manufacturer. Must know tires and be particularly capable in training builders, inspectors, and shift foremen. References required. State age, general qualifications, etc. Address Box No. 9307, care of INDIA RUBBER WORLD.

EXPERIENCED MAN FOR VULCANIZING BATHING CAPS. PERmanent connection. Address Box No. 9308, care of INDIA RUBBER WORLD.

CHEMIST

Wanted by large concern near New York. Excellent scientific background and thorough training in

RUBBER RESEARCH WORK

required.

This is one of the most attractive positions existing in the field, warranting the consideration of the most gifted and proficient rubber research chemists.

The EXPERIENCE, ABILITY and MORAL STANDARDS of the man we select must be very high, and references will be thoroughly investigated. Age 30 to 40 years preferred.

Remuneration will be commensurate.

Only letters giving full information will be considered, and, of course, will be treated with the strictest confidence. Employes of our organization are aware of this advertisement. Address Box No. 9323, care of INDIA RUBBER WORLD.

WANTED: CHEMIST EXPERIENCED ON MECHANICAL RUBber goods, particularly government and railroad specification work. Give all details regarding experience and former employers in rubber goods manufacture. State age and salary expected. Address Box No. 9310, care of INDIA RUBBER WORLD.

YOUNG CHEMIST, COLLEGE GRADUATE, WANTED FOR RUBberizing plant located near Boston. Give full details including salary expected in first letter. Address Box No. 9319, care of INDIA RUBBER WORLD.

GENERAL SALES MANAGER FOR RUBBER COMPANY MANUfacturing a general mechanical goods line. Good opportunity for exceptional ability and experience. Give full particulars in first letter. Address Box No. 9326, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

RUBBER BALLOON PLANT, GOOD PROPOSITION, BIG MONEY maker, old established customers, owner retiring, sacrifice real estate and all for $70,000, terms. Address Box No. 9320, care of INDIA RUBBER WORLD.

FOR SALE

THE BAY STATE INSULATED WIRE & CABLE CO. plant situated on the New York, New Haven & Hartford Railroad in the Hyde Park District of Boston, Mass. This factory has been run up to within a few weeks and is fitted up with every machine necessary to make all kinds of rubber covered wire up to one million circular mils.

Everything is in first class shape and the plant is ready to start up at one day's notice. Old help can be brought back if wanted.

Apply to Samuel L. Webb, Assignee, 6 Beacon Street, Boston, Mass.

(*Advertisements continued on page* 134)

The CARTER BELL MFG CO

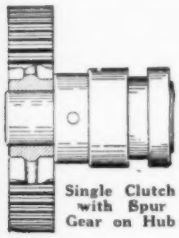
CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES

150 Nassau St New York

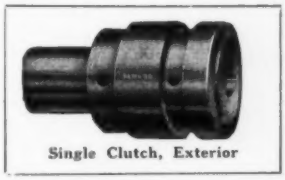
THE JOHNSON FRICTION CLUTCH

JOHNSONS Excel on Rubber Cleaning Machines

On the No. 2 Air Bag Cleaning Machine of the New Haven Sherardizing Company, of Hartford, Conn., two JOHNSON Clutches work splendidly. JOHNSONS give equally satisfactory service on hundreds of other Rubber Machines.



Single Clutch with Spur Gear on Hub



Single Clutch, Exterior

On the machine mentioned above, a No. 2 JOHNSON Double Clutch in the gear box raises and lowers the table. And a No. 6 Single Clutch is used on the main silent chain drive. Use JOHNSON Clutches on your Rubber Machines.

Write for Catalog "RU."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

SR

The Mark of Fine Rubber Goods

Druggists Sundries	Play Balls
Adhesive Plaster	Combs
Sporting Goods	Bath Caps
Surgeons' Gloves	Tubing
Industrial Gloves	Nipples
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THE SEAMLESS RUBBER CO.
NEW HAVEN, CONN.

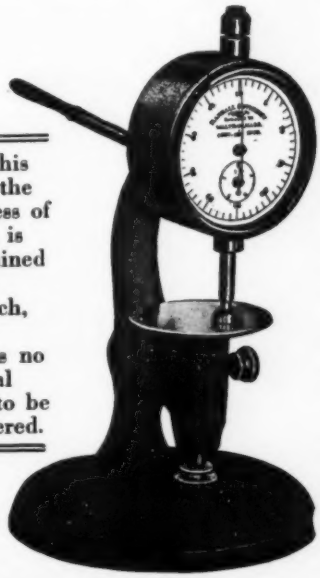
Makers of Fine Rubber Goods since 1877

SEND FOR CATALOGUE

The Efficiency Rubber Gauge

(The Randall and Stickney Thickness Gauge)

With this Gauge the thickness of rubber is determined within .001 inch, and there is no personal factor to be considered.



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Operated by a Standard Pressure on a Standard Area

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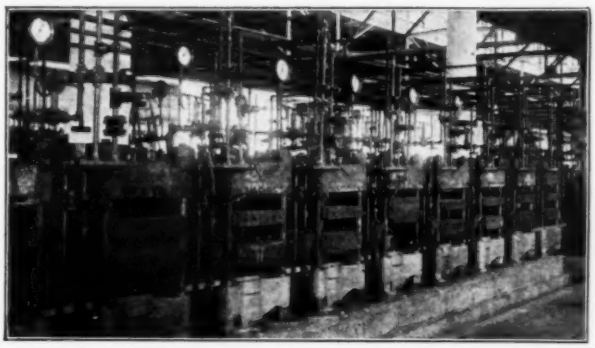

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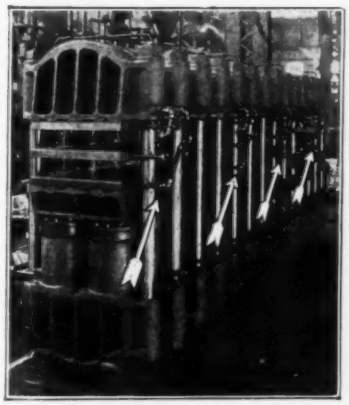

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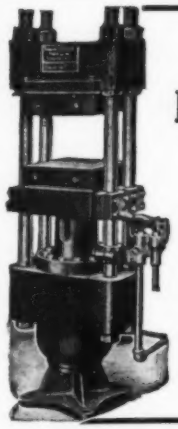

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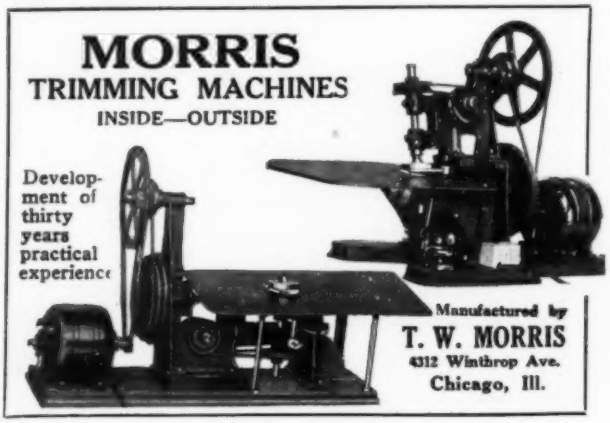

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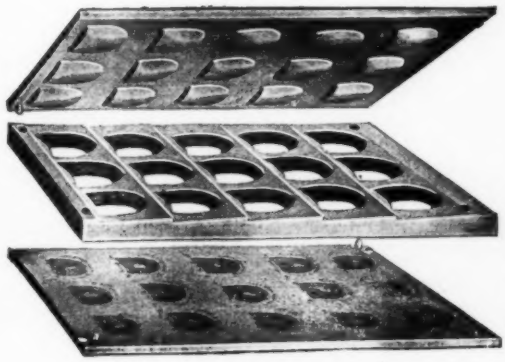

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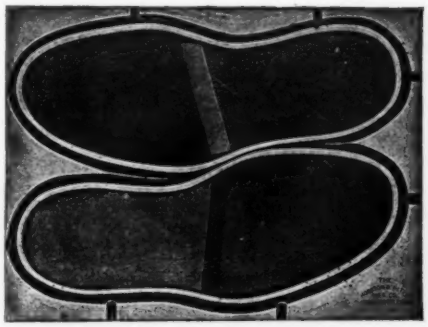

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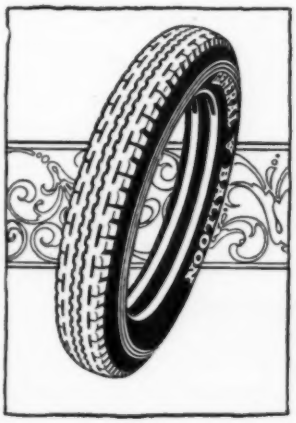

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"Scheme of Accelerator Classification," R. P. Dinsmore.
"Heat Transference in the Rubber Industry," Colin Macbeth, M.I.A.E., M.S.A.E., F.I.R.I.
"Some Notes on Two-accelerator Effects," E. Anderson, F.I.C.
"Factory Observations," J. A. Watson, F.I.C., A.C.G.I.
"Checking Rubber Chemicals," J. A. Robertson, A.I.C.
"Moulded Rubber Goods," R. Clark, A.I.C.
"Permeability of Rubber and Methods of Measuring It," H. A. Daynes, D.Sc., F.Inst.P., F.I.R.I.
"Synthetic Resins," A. A. Drummond, M.Sc., A.I.C.
"Methods Used for Determining Abrasion with Particular Reference to the Relation Between Road Performance and Laboratory Results," L. J. Lambourn, M.Sc., A.Inst.P., A.I.R.I. (Sc.)
"Note on Behaviour of Prussian Blue and Some Other Ferrocyanides in Rubber," J. R. Scott, D.Sc.
"Stickiness of Unvulcanized Rubber," R. W. Griffiths, B.Sc., A.Inst.P., A.I.R.I. (Sc.) and Maldwyn Jones, B.Sc.
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Dr. E. A. Hauser, F.I.R.I.: New x-ray studies on rubber and similar substances.

Dr. E. A. Hauser, F.I.R.I., and Dr. Mark: The structure of stretched rubber.

Dr. Hermann Miedel: The structure of gutta percha and balata.

Prof. Dr. R. Pummerer: The constitution of rubber.

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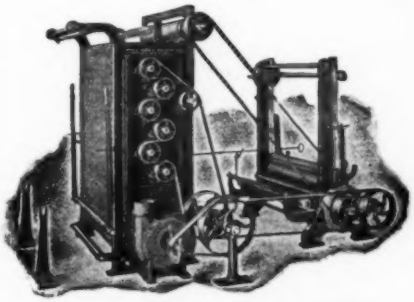

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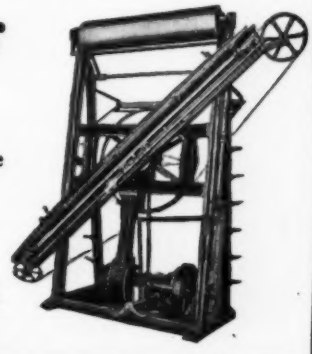

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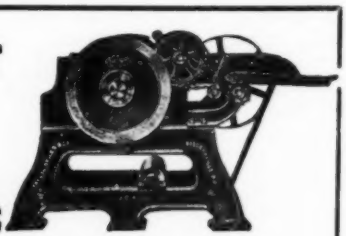
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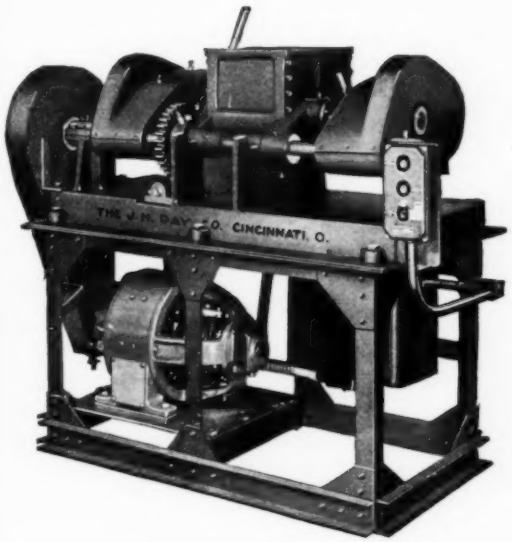

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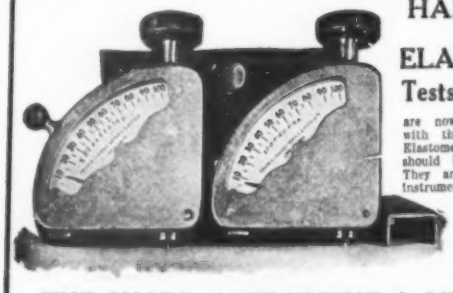

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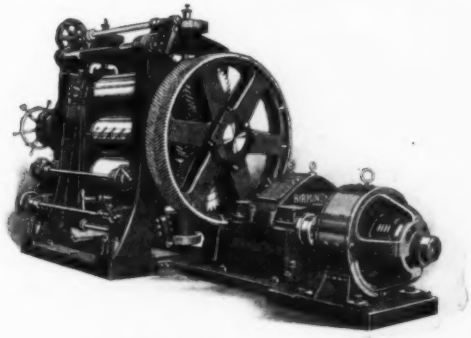

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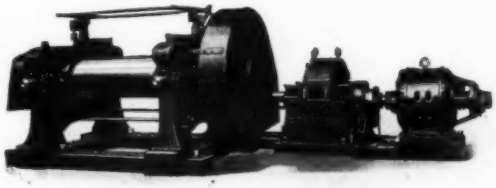

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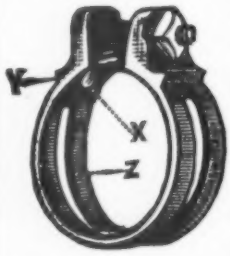

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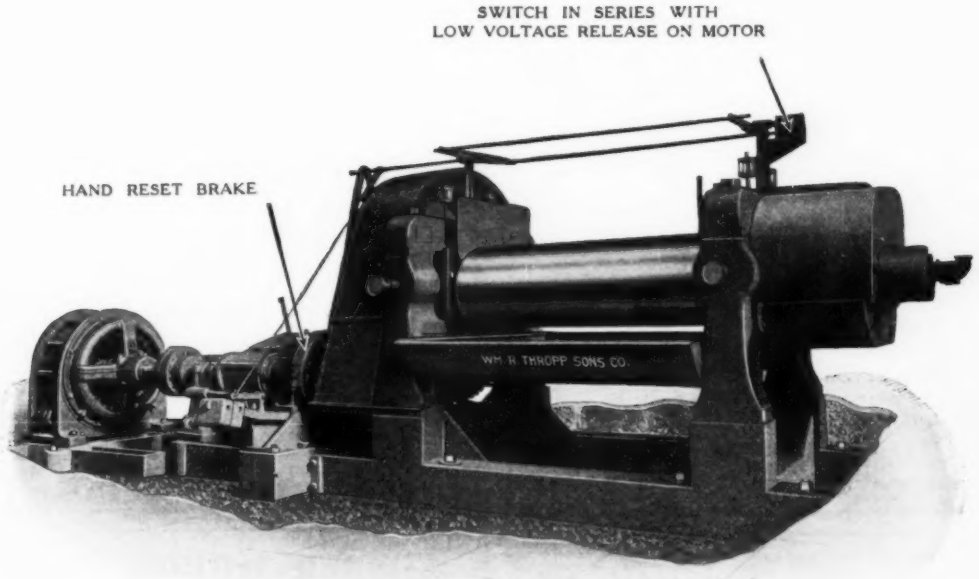

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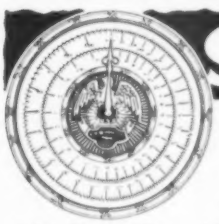

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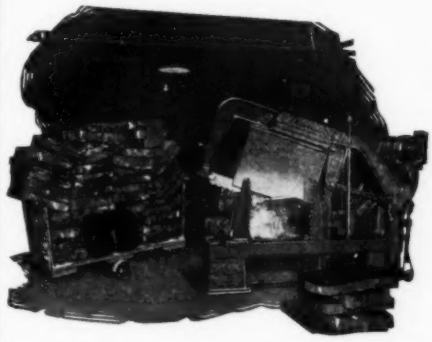

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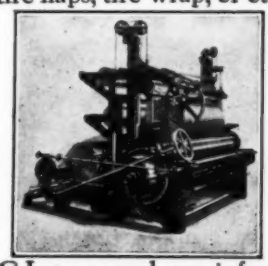

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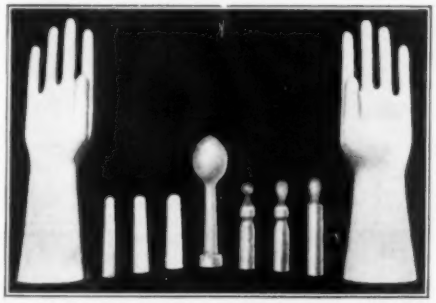

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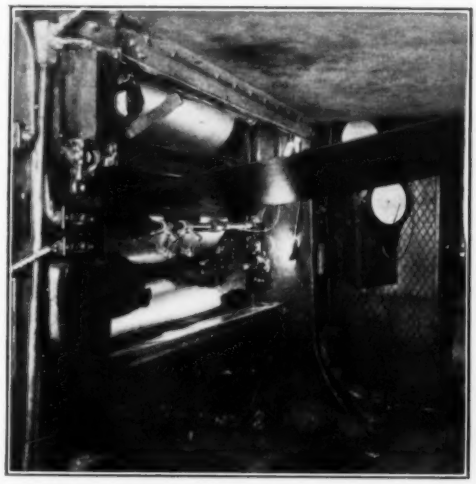

Installation of Bristol's Thermometers and Surface Roll Temperature Recording Device

The need of closely regulated calender roll temperatures for tire building and other high quality rubber goods is met with true accuracy by use of *BRISTOL'S SURFACE ROLL TEMPERATURE RECORDING DEVICE.*

This new instrument records data for correctly specifying the working temperatures of various sheet stocks as well as the heat applied in actual practice.

Thirty-eight years of experience in *producing Bristol Recording devices* has given this organization a command of manufacturing processes that assure the development of instruments of greatest accuracy and durability.

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WATERBURY, CONNECTICUT

BUYERS' GUIDE

BOOTS AND SHOES.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Footwear Co., Hudson, Mass.
Gutta Percha & Rubber, Limited, Toronto, Canada.
United States Rubber Co., New York.

BRAIDERS—Hose.
New England Butt Co., Providence, R. I.

BRAKE LINING—Asbestos.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Thermoid Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Trenton, N. J.

BRUSHING MACHINES AND BRUSHES.
Curtis & Marble Mach. Co., Worcester, Mass.

BUFFING MACHINES.
Emerson Apparatus Co., Melrose, Mass
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
Utility Manufacturing Co., Oudaby, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.

BULBS.
Davol Rubber Co., Providence R. I.
Faultless Rubber Co., Ashland, O.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

BURRS—Heel.
Sessions, J. H., & Son, Bristol, Conn.

CADMIUM YELLOW.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Wishnick-Tumpeer, Inc., New York.

CALENDER SHELLS.
Gammeter, W. F., Co., The, Cadis, Ohio.
Lowe, Clyde E., Co., Cleveland, Ohio.
New Haven Sherardizing Co., Hartford, Conn.

CALENDER SCREW-DOWN — Motor Driven.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

CALENDERED GOODS.
Archer Rubber Co., Milford, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Hodgman Rubber Co., Framingham, Mass.
Meade Rubber Co., Stoughton, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

CALENDERS.
Adamson Machine Co., The, Akron, Ohio.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Thropp, William R. Sons, Co., Trenton, N. J.

CALENDERS—Brake Lining.
Black Rock Mfg. Co., The, Bridgeport, Conn.

CALENDERS—Embossing.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

CALENDERS—Packing.
Black Rock Mfg. Co., The, Bridgeport, Conn.

CARBON BLACK.
Binney & Smith Co., New York.
Cabot, Godfrey L., Inc., Boston, Mass.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

CARBON, TETRACHLORIDE AND BISULPHIDE.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York.

CASTINGS.
Adamson Machine Co., The, Akron, Ohio.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

CAUSTIC SODA.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York.

CEMENT—Rubber.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

CHEMISTS—Consulting Rubber.
Maywald, F. J., Dr., Belleville, N. J.
Olin Laboratories, R. R., Akron, O.

CHINA CLAY.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Taintor Co., The, New York.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

CHROMIUM—Oxide.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M. & F., Inc., New York.
Westmoreland Chemical & Color Co., The, Philadelphia, Pa.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

CHUCKS—Automatic Core.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

CLEANERS—Crude Rubber.
Williams Foundry & Machine Co., Akron, Ohio.

CLICKING MACHINES.
Hamlin Machine Co., Lynn, Mass.
United Shoe Machinery Corp., Boston, Mass.

CLOTHING—Waterproof.
Archer Rubber Co., Milford, Mass.
Badger Raincoat Co., Port Washington, Wis.
Chicago Rubber Clothing Co., Racine, Wisconsin.
Clifton Mfg. Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Hodgman Rubber Co., Framingham, Mass.
Pirelli, Milan, Italy.
United States Rubber Co., New York.

CLUTCH BRAKES—Pneumatic.
Farrel - Birmingham Co., Inc., Derby, Conn.

CLUTCHES—Friction.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Williams Foundry & Machine Co., Akron, Ohio.

CLUTCHES AND BRAKES—Magnetic.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
General Electric Co., Schenectady, N. Y.

COLORS.
Ault & Wiborg Co., New York.
Binney & Smith Co., New York.

COLORS (Continued).
Grasselli Chemical Co., Cleveland, O.
Grasselli Dyestuff Corp., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Klipstein, A., & Co., New York.
McNulty, Joseph A., New York.
Roessler & Hasslacher Chemical Co., New York.
Rubber Service Laboratories Co., The, Akron, Ohio.
Thomas, V. G., & Co., New York, N. Y.
Tyson Bros., Inc., Woodbridge, N. J.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chem. & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

COLORS—Balloon.
Grasselli Chemical Co., Cleveland, O.
Klipstein, A., & Company, New York.

COMBS.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

COMPRESSORS—Air.
Williams Foundry and Machine Co., Akron, Ohio.

CONNECTORS—Air.
Akron Standard Mold Co., Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

CONTROLLERS—Electrical.
General Electric Co., Schenectady, N. Y.

CONTROLLERS—Temperature.
Bristol Co., The, Waterbury, Conn.

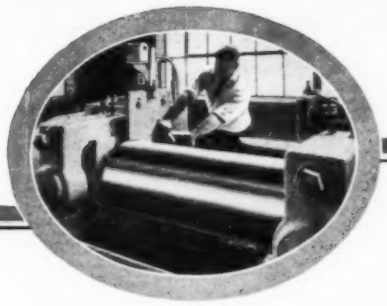
CORD—Pure Rubber.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

COTTON GOODS.
See Ducks and Drills,
Hollands
Osnaburgs,
Sheetings,
Tire Fabrics.

COUPLINGS—Flexible and Rigid.
Falk Corporation, Milwaukee, Wis.
Farrel-Birmingham Co., Inc., Ansonia Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

CRACKERS.
Adamson Machine Co., The, Akron, Ohio.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.

For Complete Addresses See Advertisements—Index Page 170



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Akron, Ohio

BUYERS' GUIDE

CRANES.
Southwark Foundry & Machine Co., Philadelphia, Pa.

CRANES—Hydraulic.
Watson-Stillman Co., The, New York.

CUTTERS—Band.
Adamson Machine Co., The, Akron, Ohio.
Farrel - Birmingham Co., Inc., Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

CUTTERS—Bias.
Farrel - Birmingham Co., Inc., Derby, Conn.
Spadone Machine Co., Inc., New York.

CUTTERS—Crude Rubber.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Peerless Machine Co., The, Racine, Wis.
Southwark Foundry & Machine Co., Philadelphia, Pa.

CUTTERS—Jar Rings, Washers, etc.
Black Rock Manufacturing Co., Bridgeport, Conn.

CUTTERS—Scrap Rubber.
Taylor, Stiles & Co., Riegelsville, N. J.

CUTTERS—Sole.
Wellman Co., Medford, Mass.

CUTTERS—Stock.
Black Rock Mfg. Co., The, Bridgeport, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.

CUTTERS—Strip.
Cameron Machine Co., Brooklyn, N. Y.
Farrel - Birmingham Co., Inc., Derby, Conn.
New England Butt Co., Providence, R. I.

CUTTERS—Tape.
Black Rock Mfg. Co., The, Bridgeport, Conn.

CUTTERS—Tire.
Adamson Machine Co., The, Akron, Ohio.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
Peerless Machine Co., The, Racine, Wis.

DENSIMETERS.
Stowe & Woodward Co., Newton Upper Falls, Mass.

DENTAL GUM.
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

DENTAL RUBBER DAM.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Framingham, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

DEVULCANIZERS.
Biggs Boiler Works Co., The, Akron, Ohio.

DIE SINKING AND ENGRAVING.
Burroughs Co., The, Newark, N. J.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Mechanical Mold & Machine Co., The, Akron, Ohio.

DIEING OUT MACHINES.
Hamlin Machine Co., Lynn, Mass.

DIES.
Akron Equipment Co., The, Akron, Ohio.
Burroughs Co., The, Newark, N. J.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

DIES (Continued).
Housatonic Machine & Tool Co., Bridgeport, Conn.
Mechanical Mold & Machine Co., The, Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Williams Foundry & Machine Co., Akron, Ohio.

DIPPED GOODS.
Faultless Rubber Co., Ashland, O.
Seamless Rubber Co., New Haven, Conn.

DIPPED GOODS FORMS.
Colonial Insulator Co., The, Akron, Ohio.
Seville Porcelain Co., Seville, O.

DOLLS.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, O.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

DOUBLING MACHINES.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

DRESS SHIELD MATERIAL.
Archer Rubber Co., Milford, Mass.
Archer Strauss Rubber Co., Framingham, Mass.
Canfield Rubber Co., The, Bridgeport, Conn.
Hodgman Rubber Co., Framingham, Mass.
Omo Manufacturing Co., Middleton, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

DRIERS—Oil.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

DRIERS—Cloth.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
Textile-Finishing Machinery Co., Providence, R. I.

DRIVES—Worm.
De Laval Steam Turbine Co., The, Trenton, N. J.

DRUMS—Bead.
National Machinery Rubber Co., De Mattia Division, Clifton, N. J.

DRUMS—Tire Building.
National Machinery Rubber Co., De Mattia Division, Clifton, N. J.
Utility Manufacturing Co., Cudahy, Wisconsin

DRYING MACHINES.
American Process Co., New York.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Carrier Engineering Corp., Newark, N. J.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

DUCKS AND DRILLS.
Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.
Willingham Cotton Mills, Macon, Ga.

DUROMETERS.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

ENGINEERING DEVICES.
Yarnall-Waring Co., Philadelphia, Pa.

ENGINEERS—Rubber Plant.
Consulting Co., The, Cincinnati, Ohio.

ERASERS.
Faultless Rubber Co., Ashland, O.

EXPERIMENTAL WORK.
Maywald, F. J., Belleville, N. J.

EYELETTING MACHINES.
United Shoe Machinery Corporation, Boston, Mass.

FACTICE.
See Rubber Substitutes.

FINGER COTS.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, O.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

FIXTURES — Hot Water Bottle, Combination.
Brass Goods Mfg. Co., Brooklyn, N. Y.
Davidson Rubber Co., Boston, Mass.

FLOCK—COTTON.
Claremont Waste Mfg. Co., Claremont, N. H.

FLOORING.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
Stedman Products Co., South Braintree, Mass.
United States Rubber Co., New York.

FOSSIL FLOUR.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.

GAGES—Hardness.
Pusey and Jones Corporation, The, Wilmington, Delaware.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.
Stowe & Woodward Co., Newton Upper Falls, Mass.

GAGES—Pressure.
Bristol Co., The, Waterbury, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Utility Manufacturing Co., Cudahy, Wis.

GAGES—Thickness.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Randall, Frank E., Waltham, Mass.

GASKETS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield, H. O., Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Hodgman Rubber Co., Framingham, Mass.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

GAUGES—Tire Pressure.
Schrader's, A., Sons, Inc., Brooklyn, N. Y.

GEAR CUTTING.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

GEARS.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

GEARS—Helical.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

GEARS—Herringbone.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

GEARS—Reduction.
De Laval Steam Turbine Co., The, Trenton, N. J.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

GEARS—Worm.
De Laval Steam Turbine Co., The, Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.

GEM DUCK.
Plymouth Rubber Co., Inc., Canton, Mass.

GLOVES—Electricians', Household and Surgeons'.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

GRAPHITE.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.

GRINDERS—Hard Rubber Dust.
Farrel-Birmingham Co., Inc., Derby, Conn.
Day, J. H., Co., The, Cincinnati, Ohio.

GUAYULE RUBBER.
Baird Rubber & Trading Co., New York.
Continental Rubber Co., New York.
Wilson, Charles T., Co., Inc., New York.

For Complete Addresses See Advertisements—Index Page 170

WHITER RUBBER NOW POSSIBLE —THROUGH TITANOX

A year's experience has proved that this remarkable pigment offers a new easy way to improve your whites and light tints.

TRULY, Titanox is a boon to the rubber industry. This pigment has shown such wonderful results that orders have tripled in one year!

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We urge you to investigate the unusual properties of this pigment. We are anxious for you to know the full story of Titanox—to show you the valuable results it makes possible. Write to the nearest of our four branches for further information.

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Get acquainted with this grey tube Reclaim. A good value no matter where Crude goes.

STEDMAN PRODUCTS COMPANY
SOUTH BRAINTREE MASSACHUSETTS

BUYERS' GUIDE

GUTTA PERCHA.
Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hankin, Geo., & Co., London, England.
Hardy, R. S., Co., New York.
Jacoby, Ernest, Boston, Mass.

GUTTA PERCHA TISSUE.
Bemis Associates, Inc., Watertown, Mass.

HARD RUBBER DUST.
Muehlstein, H., & Co., Inc., New York.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.

HARD RUBBER GOODS.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

HARD RUBBER GOODS.—Druggists' and Stationers' Sundries.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Pirelli, Milan, Italy.
Seamless Rubber Co., Inc., New Haven, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Whitall Tatum Co., New York, N. Y.

HARD RUBBER GOODS—Electrical.
Dominion Rubber Co., Ltd., Montreal, Canada.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.

HAT BAGS.
New York Belting & Packing Co., New York.

HEEL BURRS.
Sessions, J. H., & Son, Bristol, Conn.

HEEL NAILS.
United Shoe Machinery Corporation, Boston, Mass.

HEELS.
Firestone Tire & Rubber Co., Akron, Ohio.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

HEELS AND SOLES.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

HOISTS.
Utility Mfg. Co., Cudahy, Wis.

HOISTS—Hydraulic.
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.

HOLLANDS
McLean, Andrew, Co., New York.

HOSE—Armored.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE—Rubber.
Air Brake, Fire, Garden.
Pneumatic, Suction, Submarine, Vacuum, Dredging Sleeves, Radiator.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE—Rubber Lined.
Cotton and Linen.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOSE FITTINGS—Brass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Western Rubber Co., Goshen, Ind.
Yerdon, William, Fort Plain, New York.

HOSE LININGS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

HOSE MACHINES.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
New England Butt Co., Providence, R. I.
Williams Foundry & Machine Co., Akron, Ohio.

HOSE WIRING MACHINES.
Adamson Machine Co., The, Akron, Ohio.

HOSPITAL SHEETINGS.
Archer Rubber Co., Milford, Mass.
Archer Strauss Rubber Co., Framingham, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wis.
Dominion Rubber Co., Ltd., Montreal, Canada.
du Pont, E. I., de Nemours & Co., Inc., Fairfield, Conn.
Hodgman Rubber Co., Framingham, Mass.
Meade Rubber Co., Stoughton, Mass.
Omo Manufacturing Co., Middleton, Conn.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philaphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

HYDROCARBONS.
Ohmlac Paint & Refining Co., Chicago, Ill.
Wishnick-Tumpeer, Inc., New York, N. Y.

ICE BAG CAPS.
Brass Goods Mfg. Co., Brooklyn, N. Y.

ICE BAGS.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

IMPREGNATING EQUIPMENT—Vacuum Cloth.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.

INFUSORIAL EARTH—See Fossil Flour.

INNER TUBES.
Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., The, Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Murray Rubber Co., Trenton, N. J.
Pennsylvania Rubber Co., Jeannette, Pa.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

INSULATED WIRE AND CABLES.
Kerite Insulated Wire & Cable Co., New York.
Pirelli, Milan, Italy.
United States Rubber Co., New York.

INSULATING COMPOUNDS.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Klipstein, A., & Company, New York.
Robertson, H. H., Co., Pittsburgh, Pa.

INSULATING MACHINERY.
Adamson Machine Co., The, Akron, O.
Erie Foundry Co., Erie, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

IRON OXIDE—See Red Oxide.

JAR RING CUTTING MACHINES.
Black Rock Mfg. Co., Bridgeport, Conn.

JAR RINGS.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

For Complete Addresses See Advertisements—Index Page 170

KERITE
AN INVESTMENT
WHEN you put your money into KERITE you make an investment in service. You do more than buy conductors, insulation and protection. You obtain the best possible combination of the most desirable qualities in permanent form. KERITE remains long after the price is forgotten.
KERITE INSULATED WIRE & CABLE COMPANY
NEW YORK CHICAGO

INTERNATIONAL ACCEPTANCE BANK
INCORPORATED

International Banking Transactions

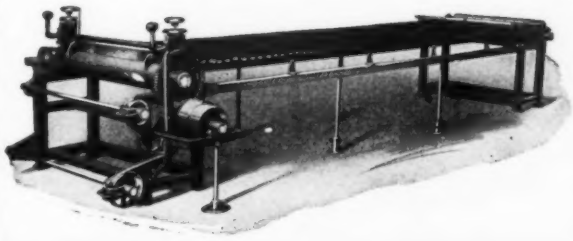
Commercial Letters of Credit
Collections Foreign Exchange
Investment Securities
Bullion and Currency

PAUL M. WARBURG, *Chairman* F. ABBOT GOODHUE, *President*

52 Cedar Street, New York

THE EXTREMELY HEAVY CONSTRUCTION OF THESE

RUBBER SPREADING MACHINES



makes them particularly well adapted for applying thin successive coatings of rubber for the manufacture of high grade sheetings, rain coatings, offset blankets, etc.

MACHINES MADE IN WIDTHS FROM 50-in. to 80-in.

NEW ENGLAND BUTT CO.
304 Pearl St. PROVIDENCE, R. I.
Chicago Office: 140 South Dearborn Street, Chicago, Ill.

SUPERIOR

BRIGHT RED OXIDES

FOR FINEST CLASS OF MIXING AND CURE

Chemically Pure—Soft as Butter—No Grit—Acid Free—Bulky—Low Gravity. STRONG, and above all UNIFORM.

NEW PRICES OF INTEREST

For Quantity or Contract While Booking Our Increased Production Communicate at Once With

V. G. THOMAS & CO. 99 John St., NEW YORK, N. Y.

Our Exclusive Agents for These Bright Red Oxides for the United States

THE DERBY-OXIDE & COLOUR CO., LTD.
RUGELEY. STAFFS. ENGLAND.

SPECIALIZING OXIDE OF IRON COLORS OF MERIT FOR OVER 30 YEARS

BUYERS' GUIDE

JOINTS—Pipe.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
Utility Manufacturing Co., Cudahy, Wis.

JOINTS—Swing.
Barco Manufacturing Co., Chicago, Ill.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
Williams Foundry & Machine Co., Akron, Ohio.

KETTLES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

LABORATORY EQUIPMENT.
Biggs Boiler Works Co., The, Akron, Ohio.
Bristol Co., The, Waterbury, Conn.
Day, J. H., Co., The, Cincinnati, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Emerson Apparatus Co., Melrose, Mass.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Interlock Metal Units, Inc., New York.
Nagle Machine Co., Erie, Pa.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

LAMPBLACK.
Binney & Smith Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LATEX—Rubber.
Buckleton & Company, Ltd., Liverpool, England.
Hankin, Geo., & Co., London, England—Byles, W. E., New York, Agent.
Hardy, R. S., Co., New York.
Jacoby, Ernest, Boston, Mass.
United States Rubber Co., New York.

LATHES—Hard Rubber.
Adamson Machine Co., The, Akron, Ohio.

LATHES—Jar Ring.
Adamson Machine Co., The, Akron, Ohio.
Thropp, William R., Sons' Co., Trenton, N. J.

LEAD—Oleate.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Stamford Rubber Supply Co., Stamford, Conn.
Wishnick-Tumpeer, Inc., New York.

LEAD—Stripping Machines.
Robertson, John, Co., Inc., Brooklyn, N. Y.

LEAD—Sublimed.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

LIME.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LINERS—Processed.
Cleveland Liner & Mfg. Co., The, Cleveland, Ohio.

LITHARGE.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Co., New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York.

LITHOPONE.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Klipstein, A., & Company, New York.
New Jersey Zinc Sales Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

LOOMS—Hose.
Royle, John, & Sons, Paterson, N. J.

MACHINERY—Transmission Power.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.

MAGNESIA—Calcined.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MAGNESIUM CARBONATE AND OXIDE.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Co., New York.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer, Inc., New York, N. Y.

MANDRELS—Circular.
Lowe, Clyde E., Co., Cleveland, Ohio.

MANDRELS—Sherardized.
New Haven Sherardizing Co., New Haven, Conn.

MANDRELS—Tube Splicing.
Williams Foundry & Machine Co., The, Akron, Ohio.

MASTICATORS.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

MATTING—Mats and Stair Treads.
Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

MICA.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MILLS.
Adamson Machine Co., The, Akron, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Erie Foundry Co., Erie, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Thropp, William R., Sons' Co., Trenton, N. J.

MINERAL RUBBER.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Ohmlac Paint & Refining Co., Chicago, Ill.
Robertson, H. H., Co., Pittsburgh, Pa.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

MIXERS—Automatic.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

MIXERS—Cement, Plastic.
Day, J. H., Co., The, Cincinnati, Ohio.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.

MIXERS—Internal.
Farrel - Birmingham Co., Inc., Derby, Conn.

MOLD WASH.
Rubber Service Laboratories Co., The, Akron, Ohio.

MOLDS.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.

MOLDS (Continued)
Akron Standard Mold Co., Akron, Ohio.
Akron-Williams, Akron, Ohio.
Brockton Tool Co., Brockton, Mass.
Burroughs Co., The, Newark, N. J.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Mechanical Mold & Machine Co., The, Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Banner Division, Columbiana, Ohio.
De Mattia Division, Clifton, N. J.
Kuhlke Division, Akron, Ohio.
Reynolds Machine Co., The, Massillon, Ohio.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Terkelsen Machine Co., Boston, Mass.
Williams Foundry & Machine Co., Akron, Ohio.

MOLDS—Bead.
Akron Standard Mold Co., Akron, Ohio.
Akron-Williams, Akron, Ohio
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Utility Manufacturing Co., Cudahy, Wisconsin.
Williams Foundry & Machine Co., Akron, Ohio.

MOLDS—Druggists' Sundries.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

MOLDS—Engraving Tire.
Akron-Williams, Akron, Ohio
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
De Mattia Division, Clifton, N. J.
Reynolds Machine Co., The, Massillon, Ohio.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.

MOLDS—Heels and Soles.
Brockton Tool Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Wade, Levi C., Lynn, Mass.

MOLDS—Inner Tube.
Akron Equipment Co., Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

MOLDS—Mechanical Rubber Goods.
Adamson Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Mechanical Mold & Machine Co., Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
De Mattia Division, Clifton, N. J.
Terkelsen Machine Co., Boston, Mass.
Wade, Levi C., Lynn, Mass.

MOLDS AND CORES—Tires.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., Akron, Ohio.

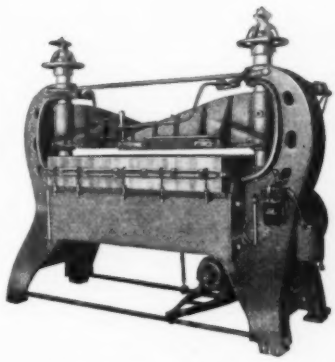
For Complete Addresses See Advertisements—Index Page 170

FOR EFFICIENT CUTTING OF FABRICS

IN the various divisions of rubber manufacture particularly in footwear, the Ideal Clicking Machine ranks foremost for die cutting fabrics. The Ideal Clicking Machines—Models C and E are available for cutting all materials used in making vulcanized footwear, and for other rubber products such as rubber soles, heels, tire patches, mechanicals and various sundries.

These machines offer also large possibilities for the economical cutting of rubber in the form of sheet and slab stock either for assembly or as blanks for direct molding.

For further particulars get in touch with our nearest branch office.



Ideal Clicking Machine —Model C—Factory or motor drive

In manufacturing trimmed canvas vulcanized footwear this machine is used for cutting small parts such as trimmings, ankle patches, stays, insoles, rag fillers and the like.

UNITED SHOE MACHINERY CORP.

BOSTON, MASSACHUSETTS

Branches

Auburn, Me., 87 Main
Brockton, Mass., 93 Centre
Cincinnati, O., 407 Gilbert
Chicago, Ill., 18 South Market
Haverhill, Mass., 145 Essex
Johnson City, N. Y., 276 Main
Lynn, Mass., 306 Broad
Marlboro, Mass., 11 Florence
Milwaukee, Wis., 255 Fourth
New Orleans, La., 216 Chartres
New York, N. Y., 37 Warren
Philadelphia, Pa., 221 North 13th
Rochester, N. Y., 130 Mill
St. Louis, Mo., 1423 Olive
San Francisco, Cal., 859 Mission

Ideal Twin Clicking Machine —Model E—Motor Drive

This machine is used for cutting all fabrics such as canvas linings, osnaburg, cashmerette, jersey and sateen. It is individually motor driven and may be operated with a high degree of speed and safety with a low scrap percentage.

Manufacturers of

MOLDS for Mechanical Rubber Goods

MOLDS FOR

Heels, Soles, Hot Water Bottles, Syringe Bags, Bulbs, Battery Jars and Covers, Hard Rubber Pipes, etc.

Specialists in the manufacture of STEEL molds.

ALSO

Die Sinkers and Engravers. Medallion Dies a Specialty

The Mechanical Mold & Machine Co.

Corner Crosier & High Sts., Akron, O.

"ECONOMY CLICKER"

OR DIEING OUT PRESS

Built in sizes to meet any condition, and used for all kinds of rubber work by Hood Rubber Co., United States Rubber Co., Firestone Footwear Co., Dominion Rubber Co., Canada. And many others.

Especially adapted to dieing out gaskets, and will show a great increase in your production.

"SAFE, STRONG, SURE AND SPEEDY"

HAMLIN MACHINE COMPANY

Main Office
91-93 Willow St.,
LYNN, MASS.

Branch Office
144 Main St.,
AUBURN, MAINE.

BUYERS' GUIDE

MOLDS AND CORES—Tires (Cont.)
Akron Standard Mold Co., Akron, Ohio.
Akron-Williams, Akron, Ohio.
Frans Foundry & Machine Co., Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Banner Division, Columbiana, Ohio.
De Mattia Division, Clifton, N. J.
Kuhlke Division, Akron, Ohio.
Reynolds Machine Co., The, Massillon, Ohio.
Williams Foundry & Machine Co., Akron, Ohio.

MOTORS—Electric.
General Electric Co., Schenectady, N. Y.

NIPPLES—Rubber.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., N. Y.

OILS—Aniline.
Klipstein, A., & Company, New York.

OILS—Palm, etc.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

OILS—Tar, Pine, Creosote, Rosin, Turpentine.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

OSNABURGS.
Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.

OVENS—Conditioning.
Emerson Apparatus Co., Melrose, Mass.

PACKING—Rubber.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

PATTERN MAKERS.
Adamson Machine Co., The, Akron, Ohio.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Williams Foundry & Machine Co., Akron, Ohio.

PETROLATUM.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Vanderbilt, R. T., Co., New York.

PIGMENTS—Titanium.
Titanium Pigment Co., Inc., New York, N. Y.

PINE TAR.
Colledge, E. W., Inc., Jacksonville, Fla.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

PITCH.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

PLANTATION MACHINERY.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

PLASTOMETER.
Pusey and Jones Corporation, The, Wilmington, Delaware.

PLUMBERS' SUPPLIES.
Acme Rubber Mfg. Co., Trenton, N. J.
Canfield Co., H. O., Bridgeport, Conn.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

PONCHOS.
Archer Rubber Co., Milford, Mass.
Chicago Rubber Clothing Co., Racine, Wisconsin.
Clifton Manufacturing Co., Boston, Mass.
Hodgman Rubber Co., Framingham, Mass.
United States Rubber Co., New York.

PRESSES—Bead.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Nagle Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Belt.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PRESSES—Heater.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.

PRESSES—Heater (Cont.)
Frans Foundry & Machine Co., The, Akron, Ohio.
Nagle Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Hydraulic.
Birmingham Iron Foundry, Derby, Conn.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
French Oil Mill Machinery Co., Piqua, Ohio.
Lake Erie Engineering Corp., Erie, Pa.
Nagle Machine Co., Erie, Pa.
Robertson, John, Co., Inc., Brooklyn, N. Y.
Williams Foundry & Machine Co., Akron, Ohio.

PRESSES—Lead Encasing.
Robertson, John, Co., Inc., Brooklyn, N. Y.

PRESSES—Packing.
Black Rock Mfg. Co., The, Bridgeport, Conn.

PRESSES—Tiling.
Utility Manufacturing Co., Cudahy, Wis.

PRESSES—Tire.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Tire Rimming.
Adamson Machine Co., The, Akron, Ohio.
Nagle Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PRESSES—Tire Vulcanizing.
Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, O.
Nagle Machine Co., Erie, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams Foundry & Machine Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES—Toggle.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Torkelson Machine Co., Boston, Mass.

PRESSES—Vulcanizing.
Adamson Machine Co., The, Akron, Ohio.
Burroughs Co., The, Newark, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Con.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio
Lake Erie Engineering Corp., Erie, Pa.
Robertson, John, Co., Inc., Brooklyn, N. Y.

PRESSES—Vulcanizing (Cont.)
Southwark Foundry & Machine Co., Philadelphia, Pa.
Thropp, William R., Sons' Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

PUMICE.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Klipstein, A., & Company, New York.

PUMPS.
Adamson Machine Co., The, Akron, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farrel - Birmingham Co., Inc., Derby, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Robertson, John, Co., Inc., Brooklyn, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.

PUMPS—Centrifugal.
Southwark Foundry & Machine Co., Philadelphia, Pa.

PUMPS—Vacuum.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

RACKS AND FRAMES.
Day, J. H., Co., The, Cincinnati, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

RACKS—Stock.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

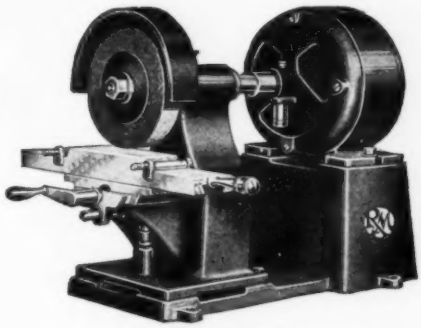
RECLAIMED RUBBER.
Appleton Rubber Co., Franklin, Mass.
Bloomingdale Rubber Co., New York.
Clapp, E. H., Rubber Co., Boston, Mass.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Nearpara Rubber Co., Trenton, N. J.
New Jersey Rubber Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works, Philadelphia, Pa.
Rubber Regenerating Co., Naugatuck, Conn.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.
Stedman Products Co., South Braintree, Mass.
U. S. Rubber Reclaiming Co., Inc., New York.
Vulcan Recovery Co., Trenton, N. J.
Xylos Rubber Co., Akron, Ohio.

RECLAIMING MACHINERY.
Adamson Machine Co., The, Akron, Ohio.
American Process Co., New York.
Biggs Boiler Works Co., The, Akron, Ohio.
Day, J. H., Co., The, Cincinnati, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Con.
Farrel - Birmingham Co., Inc., Derby, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

For Complete Addresses See Advertisements—Index Page 170

Apparatus for the Rubber Factory Laboratory

EMERSON WATER BATH
With Bierer-Davis Aging Bomb.



RUBBER BUFFING MACHINE
This machine grinds rubber samples, for textile strength test, to an absolutely uniform thickness.

BIERER-DAVIS AGING APPARATUS: For oxygenaging of compounded rubber samples.

RUBBER BUFFING MACHINE: For preparing tensile strength rubber samples of uniform thickness.

EMERSON FUEL CALORIMETER: Indispensable adjunct to the laboratory for checking fuel values.

EMERSON TEXTILE CONDITIONING OVENS— Used in conjunction with breaking tests of fabrics.

Emerson Apparatus Co.

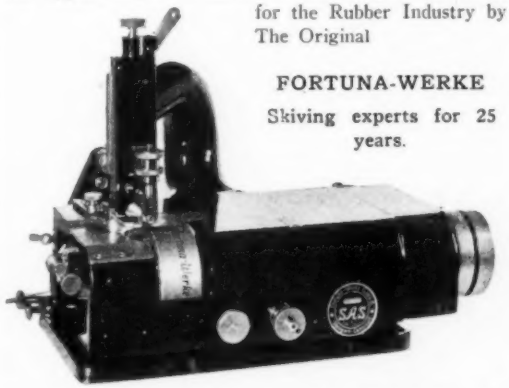
Melrose, - - - - Mass.

IF YOU SKIVE

Rubber Goods, Reliners, Boots, etc., this machine will appeal to you at once. It was designed and built for the Rubber Industry by The Original

FORTUNA-WERKE

Skiving experts for 25 years.



Many refinements and improvements to make your work easier and better. Over 22,000 FORTUNA-WERKE Machines in use in all parts of the World.

Special Knives for Rubber fit old Models

Write for Details

Manufacturers Supplies Co.

716-32 No. 18th St. St. Louis, Mo.

Sole distributers for United States and Canada

Firestone

The RITZ IMPERIAL
Patent Applied For

Here is the keynote of Women's fashionable Rubber Footwear. Adjustable fastener around ankle and instep insures perfect fit. Latest costume colors; all sizes.

Consistent advertising is building trade which the quality holds. Write for information on the complete Firestone Footwear line and Dealer Helps.

The Mark of Quality

Firestone Footwear Company
Hudson, Massachusetts

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER Harvey S. Firestone

BUYERS' GUIDE

RECLAIMING WATER SEPARATORS.
American Process Co., New York.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

RECORDING INSTRUMENTS—Pressure, Temperature.
Bristol Co., The, Waterbury, Conn.

RED OXIDE.
Binney & Smith Co., New York.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Huber, J. M., Inc., New York.
Klipstein, A., & Company, New York.
McNulty, Joseph A., New York.
Roessler & Hasslacher Chemical Co., New York.
Thomas, V. G., & Co., New York, N. Y.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

REFINERS.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.

REPAIR STOCK.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., New York.
General Tire & Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

RESIN.
Klipstein, A., & Company, New York.
Wishnick-Tumper, Inc., New York.

RETREADING EQUIPMENT—Tire
Franz Foundry & Machine Co., The, Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

RINGS—Bead Setting.
Akron Standard Mold Co., Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
De Mattia Division, Clifton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

RINGS—Mold Side.
Williams Foundry & Machine Co., Akron, Ohio.

RIVETS.
Sessions, J. H., & Son, Bristol, Conn.

ROLLERS AND STITCHERS—Hand.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Wellman Co., Medford, Mass.

ROLLS—Chilled.
Curtis & Marble Mch. Co., Worcester, Mass.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Textile-Finishing Machinery Co., Providence, R. I.

ROLLS—Engraving.
Farrel-Birmingham Co., Inc., Ansonia, Conn.

ROLLS—Engraving (Continued)
Farrel - Birmingham Co., Inc., Derby, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

ROLLS—Rubber Covered.
Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

ROLLS—Wringer.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
New York Belting & Packing Co., New York.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

ROSIN.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

ROTTEN STONE.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.

RUBBER—Brokers.
Buckleton & Company, Ltd., Liverpool, England.
Dunbar, F. W., & Co., Inc., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hardy, Roger S., New York.
Harriss, Irby & Vose, New York.
Hentz, H., & Co., New York.
Jacoby, Ernest, Boston, Mass.
Wood Vander Pyl Co., Inc., New York, N. Y.

RUBBER—Importers and Exporters.
Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Chalfin, Joseph, Inc., New York.
Continental Rubber Co., New York.
Hankin, Geo., & Co., London, England.
Hirsch, Adolph, & Co., Inc., New York.
Muehlstein, H., & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

RUBBER—Washed and Dried.
Acushnet Process Co., New Bedford, Mass.
Astlett, H. A., & Co., New York.

RUBBER BANDS.
Davol Rubber Co., Providence, R. I.
Easthampton Rubber Thread Co., Easthampton, Mass.
Hodgman Rubber Co., Framingham, Mass.
Murray Rubber Co., Trenton, N. J.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

RUBBER COATED CLOTHS.
Archer Rubber Co., Milford, Mass.
Archer Strauss Rubber Co., Framingham, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., The, Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wisconsin.
Clifton Manufacturing Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Du Pont, E. I., de Nemours & Co., Inc., Fairfield, Conn.
Hodgman Rubber Co., Framingham, Mass.
Meade Rubber Co., Stoughton, Mass.
Mechanical Fabric Co., Providence, R. I.
Pirelli, Milan, Italy.
Plymouth Rubber Co., Inc., Canton, Mass.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

RUBBER COVERING MACHINES.
New England Butt Co., Providence, R. I.

RUBBER EXCHANGE—Members
Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Dunbar, F. W., & Co., Inc., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hardy, Roger S., New York.
Harriss, Irby & Vose, New York.
Hentz, H., & Co., New York.
Muehlstein, H., & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

RUBBER SCRAP CUTTERS.
Taylor, Stiles & Co., Riegelsville, N. J.

RUBBER SUBSTITUTES.
Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Jacoby, Ernest, Boston, Mass.
Klipstein, A., & Company, New York.
Stamford Rubber Supply Co., Stamford, Conn.
Tyson Bros., Inc., Woodbridge, N. J.

SAFETY SWITCHES—Electrical.
General Electrical Co., Schenectady, N. Y.

SANITARY GOODS.
Canfield Rubber Co., The, Bridgeport, Conn.
Hodgman Rubber Co., Framingham, Mass.
Omo Mfg. Co., The, Middletown, Conn.
Rand Rubber Co., Inc., Brooklyn, N. Y.

SCLEROSCOPES.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

SCRAP RUBBER.
Birkenstein, S., & Sons, Chicago, Ill.
Chalfin, Joseph, Inc., New York.
Cummings, Wm. H., & Sons, New York.
Muehlstein, H., & Co., Inc., New York.
Norton, M., & Co., Medford, Mass.

SECOND-HAND MACHINERY.
Albert, L., & Son, Trenton, N. J.
Bolling, Stewart, & Company, Cleveland, Ohio.

SECOND-HAND MACHINERY (Continued).
Cleveland Equipment & Engineering Co., Cleveland, O.
Norton, M., & Co., Medford, Mass.
Sherman, Geo. W., Akron, Ohio.
Surplus Trading Corp., The, Newark, N. J.
United Rubber Machinery Exchange, Newark, N. J.
United States Rubber Co., Detroit, Michigan.

SEWING MACHINES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Curtis & Marble Machine Co., Worcester, Mass.
Hamlin Machine Co., Lynn, Mass.

SHEET METAL SPECIALTIES.
Brass Goods Mfg. Co., Brooklyn, N. Y.

SHEETINGS.
Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.

SHERARDIZING.
New Haven Sherardizing Co., New Haven, Conn.

SIFTERS—Rotary.
Day, J. H., Co., The, Cincinnati, Ohio.

SILICA.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

SINGEING MACHINES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

SKIVING MACHINES.
Hamlin Machine Co., Lynn, Mass.
Manufacturers' Supplies Co., St. Louis, Mo.
Nagle Machine Co., Erie, Pa.
United Shoe Machinery Corporation, Boston, Mass.

SLITTERS—Belting Duck.
Cameron Machine Co., Brooklyn, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.

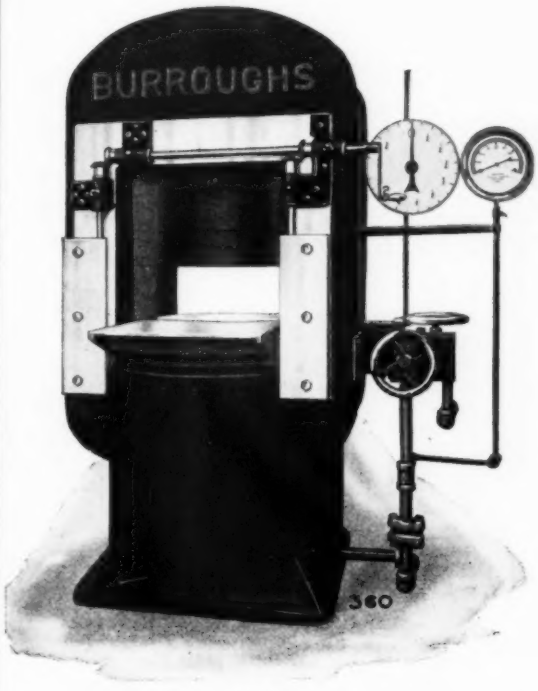
SLITTING AND REWINDING MACHINES.
Cameron Machine Co., Brooklyn, N. Y.

SOAP BARK.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

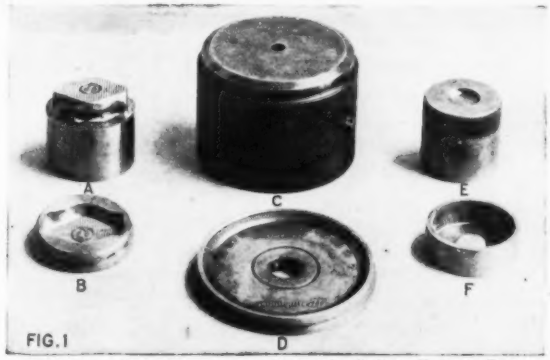
SOAPSTONE.
Binney & Smith Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

SOFTENERS.
Colledge, E. W., Inc., Jacksonville, Fla.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Hall, C. P., Co., The, Akron, Ohio.
Klipstein, A., & Company, New York.
Montgomery, W. L., & Co., Boston, Mass.
Rubber Service Laboratories Co., The, Akron, Ohio.
Vanderbilt, R. T., Co., New York.

For Complete Addresses See Advertisements—Index Page 170



7000 Ton Hubbing Press



Samples of Hubbing done on a Burroughs Rodless Hubbing Press

BURROUGHS RODLESS
DIE HUBBING AND DIE SINKING PRESSES

200 to 5,000-Ton Capacity
COMPACT, RIGID, MINIMUM DEFLECTION

Complete with Depth Indicator, Hydraulic Gauge, Forged Steel Valve, Raising Table and Hardened Steel Anvils in top and bottom platens.

Forty years' experience as commercial die hubbers has taught us the requisites of a first class hubbing unit.

Of primary importance to purchasers of our equipment the results of this experience and our knowledge of hubbing are made available to them.

We shall be pleased to have your inquiries for press and proper type of pump for use therewith.

THE BURROUGHS CO.
246 NORTH TENTH ST. Est. 1869 NEWARK, N. J.

HIC ET UBIQUE

The GRITLESS
Character of
Ault & Wiborg's
RUBBER COLORS
has established their reputation in the trade.

A fully equipped
LABORATORY
is constantly at your disposal

The AULT & WIBORG CO.
461 Eighth Avenue NEW YORK CITY
CINCINNATI, OHIO

Stock carried at New York and Cincinnati

WILLINGHAM COTTON MILLS
MACON - - GEORGIA

Manufacturers
of
Hose *and* Belting Ducks
Wide Numbered Ducks
Press Cloths

"Wilcotmil" Brand

SELL DIRECT

SOLING—Crêpe.
Buckleton & Company, Ltd., Liverpool, England.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Hankin, Geo., & Co., London, England.
Harriss, Irby & Vose, New York.
Jacoby, Ernest, Boston, Mass.

SOLVENT RECOVERY APPARATUS.
Devine, J. P., Mfg. Co., Buffalo, N. Y.

SPECIALTIES—Rubber.
Canfield, H. O., Co., The, Bridgeport, Conn.
Canfield Rubber Co., The, Bridgeport, Conn.
Chicago Rubber Clothing Co., Racine, Wis.
Dominion Rubber Co., Ltd., Montreal, Can.
Essex Rubber Co., Trenton, N. J.
Hodgman Rubber Co., Framingham, Mass.
Oak Hill Rubber Co., Oak Hill, Ohio.
Omo Manufacturing Co., Middletown, Conn.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Whitall Tatum Co., New York, N. Y.

SPLICER—Tube.
Huetter-Premier Machine Co., Detroit, Mich.

SPLICING COMPOUNDS.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

SPONGE PRODUCTS—Rubber.
Faultless Rubber Co., Ashland, O.
Oak Hill Rubber Co., Oak Hill, O.

SPONGES—Rubber.
Faultless Rubber Co., Ashland, O.
Oak Hill Rubber Co., Oak Hill, O.

SPREADERS.
Adamson Machine Co., The, Akron, Ohio.
Farrel - Birmingham Co., Inc., Derby, Conn.
New England Butt Co., Providence, R. I.
Textile-Finishing Machinery Co., Providence, R. I.

STAMP GUM.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
United States Rubber Co., New York.

BUYERS' GUIDE

STARCH—Corn.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

STEARIC ACID.
Binney & Smith Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.

STEEL FURNITURE
Interlock Metal Units, Inc., New York.

STEEL SHELVING AND COMPOUND BINS.
Interlock Metal Units, Inc., New York.

STEEL STAMPINGS.
Sessions, J. H., & Son, Bristol, Conn.

STITCHERS.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

STOPPERS—Rubber.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, O.
New York Belting & Packing Co., New York.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

STOPPLES—Screw (Water Bottle).
Faultless Rubber Co., Ashland, Ohio.
Schrader's, A., Sons, Inc., Brooklyn, N. Y.

STRAINING MACHINES.
Nagle Machine Co., Erie, Pa.
Royle, John, & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

STRETCHERS—Belting.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., Derby, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.

SULPHUR.
Battelle & Renwick, New York.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Southern Acid & Sulphur Co., St. Louis, Mo.
Stauffer Chemical Co., Houston, Texas.
White, T. & S. C., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

SULPHUR CHLORIDE.
Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Roessler & Hasslacher Chemical Co., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer, Inc., New York.

SYRINGE SHUT OFFS.
Brass Goods Mfg. Co., Brooklyn, N. Y.

SYRINGES—Fountain.
Davidson Rubber Co., Boston Mass.
Davol Rubber Co., Providence R. I.
Faultless Rubber Co., Ashland, O.
United States Rubber Co., New York.

TABLES—Stripping.
Akron Standard Mold Co., Akron, Ohio.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
Williams Foundry & Machine Co., The, Akron, Ohio.

TALC.
Binney & Smith Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.

TALC (Continued).
Roessler & Hasslacher Chemical Co., New York.
Vanderbilt, R. T., Co., Inc., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer, Inc., New York.

TAPE—Adhesive.
Bemis Associates, Inc., Watertown, Mass.

TAPE—Cloth Friction.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Home Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

TAPE—Insulating.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

TAPE—Tire.
Adams, H. J., Co., The, Akron, Ohio.

TECHNOLIGISTS—Consulting, Rubber.
Maywald, F. J., Belleville, N. J.
Norris, Webster, Hempstead, N. Y.
Olin, R. R., Laboratories, Akron, Ohio.

TENTERING MACHINES.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

TESTING MACHINES.
Scott, Henry L., Company, Providence, R. I.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

THERMOMETERS.
Bristol Co., The, Waterbury, Conn.

THREAD—Rubber.
Easthampton Rubber Thread Co., Easthampton, Mass.
Mechanical Fabric Co., Providence, R. I.
United States Rubber Co., New York.

For Complete Addresses See Advertisements—Index Page 170

We Manufacture a Variety of Shades of

RED OXIDE OF IRON

particularly adapted for
RUBBER MANUFACTURERS' USE

Extremely strong in coloring power and ground impalpably fine. Also various grades of Talc, Soapstone and Asbestine. Write us for samples and prices.

C. K. WILLIAMS & CO. **Easton, Pa**

Pacific Coast Representative, Marshall Dill — 216 Pine St., San Francisco, Calif.

Sulphurettes

AND OTHER COMPOUNDS
OF

ANTIMONY

RARE METAL PRODUCTS CO.
BELLEVILLE NEW JERSEY

America's Largest Antimony Manufacturer

RUBBER
SULPHUR

"Tire" Brand
Superfine
99½%

STAUFFER QUALITY CHEMICALS

"Tube" Brand
Velvet
100%

STAUFFER CHEMICAL CO. of TEXAS
Petroleum Bldg. Houston, Texas

SALES OFFICES

111 W. Washington St. CHICAGO
1531 W. 25th St. CLEVELAND
452 Lexington Ave. NEW YORK

BERGENPORT BRAND
PURE SOFT SULPHUR
PREPARED ESPECIALLY FOR
Rubber Manufacturers
T. & S. C. WHITE CO.
Established 1841
100 William Street NEW YORK

The Unexcelled Softener

ARLINGTON MILLS

DEGRAS

PURE WOOL GREASE

Reclaimed Rubber

A further important point learned recently is that Degras is being used in the manufacture of reclaimed rubber by those who are most advanced in the art.

The effect of Degras, which is added to the rubber scrap before processing, is that it reduces the surface tension of the rubber and permits easy access of the steam and alkali used to effect reclaiming.

Samples and prices sent on request.

W. L. MONTGOMERY & CO.
SOLE SELLING AGENTS
10 HIGH STREET BOSTON, MASS.

BUYERS' GUIDE

TILING.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Ltd., Toronto, Canada.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Stedman Products Co., South Braintree, Mass.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

TIMERS—Operation.
Day, J. H., Co., The, Cincinnati, Ohio.

TIRE BAND BUILDING MACHINES.
Utility Manufacturing Co., Cudahy, Wis.

TIRE BUILDING MACHINES.
National Rubber Machinery Co., Banner Division, Akron, Ohio.
De Mattia Division, Clifton, N. J.

TIRE FABRICS.
Adams, H. J., Co., The, Akron, Ohio.
Utility Manufacturing Co., Cudahy, Wis.
Bibb Mfg. Co., Macon, Ga.
Brighton Mills, Passaic, N. J.
Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.
Willingham Cotton Mills, Macon, Ga.

TIRE MACHINE DRUMS.
Gammeter, W. F., Co., The, Cadiz, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.

TIRE PRESSES.
Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

TIRE REBUILDING AND REPAIR EQUIPMENT.
Akron Equipment Co., Akron, Ohio.
Bigga Boiler Works Co., The, Akron, Ohio.
Franz Foundry & Machine Co., Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

TIRE WRAPPING MACHINES—Paper.
Terkelsen Machine Co., Boston, Mass.

TIRES—Airplane.
United States Rubber Co., New York, N. Y.

TIRES—Auto.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Murray Rubber Co., Trenton, N. J.
Pennsylvania Rubber Co., Jeannette, Pa.
Pirelli, Milan, Italy.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

TIRES—Baby Carriage.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

TIRES—Bicycle.
Dominion Rubber Co., Ltd., Montreal, Canada.
Fisk Rubber Co., Chicopee Falls, Mass.
Pennsylvania Rubber Co., Jeannette, Pa.
United States Rubber Co., New York, N. Y.

TIRES—Motorcycle.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
Pennsylvania Rubber Co., Jeannette, Pa.
United States Rubber Co., New York, N. Y.

TIRES—(Solid) Truck.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
United States Rubber Co., New York.

TITANIUM OXIDE
Titanium Pigment Co., Inc., New York, N. Y.

TOYS.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, O.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

TREAD CUTTERS.
Utility Mfg. Co., Cudahy, Wis.

TREAD-MAKING MACHINES
Farrel - Birmingham Co., Inc., Derby, Conn.
Williams Foundry & Machine Co., Akron, Ohio.

TRIMMERS—Bead.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.

TRIMMERS—Belt.
Morris, T. W., Chicago, Ill.
National Rubber Machinery Co., Banner Division, Columbiana, Ohio.
United Shoe Machinery Corp., Boston, Mass.

TRIMMERS—Sole and Heel.
Morris, T. W., Chicago, Ill.
Utility Mfg. Co., Cudahy, Wis.

TUBE WRAPPING MACHINES.
Akron Standard Mold Co., Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Banner Division, Columbiana, Ohio.
Williams Foundry & Machine Co. The, Akron, Ohio.

TUBING.
Acme Rubber Mfg. Co., Trenton, N. J.
Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Faultless Rubber Co., Ashland, O.
Gutta Percha & Rubber, Ltd., Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.

TUBING (Continued).
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York.

TUBING MACHINES.
Adamson Machine Co., Akron, O.
Erie Foundry Co., Erie, Pa.
Housatonic Machine & Tool Co., Bridgeport, Conn.
Nagle Machine Co., Erie, Pa.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Royle, John, & Sons, Paterson, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

VALVE BALLS.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., The, Passaic, N. J.
Quaker City Rubber Co., Philadelphia, Pa.
Western Rubber Co., Goshen, Ind.

VALVES.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES—Air Bag.
Schrader's, A., Son, Inc., Brooklyn, N. Y.

VALVES—Hydraulic.
Dunning & Boschert Press Co., Inc., The, Syracuse, N. Y.
Pittsburgh Valve Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES, PUMP—Rubber.
Home Rubber Co., Trenton, N. J.
Western Rubber Co., Goshen, Ind.

VALVES—Rubber.
Canfield, H. O., Co., The, Bridgeport, Conn.
Canfield Rubber Co., The, Bridgeport, Conn.

VALVES—Steam and Pump.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.

VALVES—Two Pressure.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

VALVES AND CAPS—Tire.
Schrader's, A., Sons, Inc., Brooklyn, N. Y.

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Monroe Sander Corporation, Long Island City, N. Y.

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Farrel - Birmingham Co., Inc., Derby, Conn.

VULCANIZERS.
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Akron Equipment Co., The, Akron, Ohio.
National Rubber Machinery Co., Akron Rubber Mold Division, Akron, Ohio.
Biggs Boiler Works Co., Akron, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Southwark Foundry & Machine Co., Philadelphia Pa.
Thropp, William R., Sons' Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

VULCANIZERS—Dry Heat.
Carrier Engineering Corp., Newark, N. J.

VULCANIZERS—Individual Tire.
Akron Standard Mold Co., Akron, Ohio.
National Rubber Machinery Co., De Mattia Division, Clifton, N. J.
Utility Manufacturing Co., Cudahy, Wis.

WASHER SETTING MACHINE FOR HEEL MOLDS.
Utility Manufacturing Co., Cudahy, Wis.

WASHERS—Crude Rubber.
Adamson Machine Co., The, Akron, Ohio.
Devine, J. P., Mfg. Co., Buffalo, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel - Birmingham Co., Inc., Derby, Conn.
Nagle Machine Co., Erie, Pa.
Thropp, William R., Sons' Co., Trenton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

WASHERS—Rubber Heels.
Sessions, J. H., & Son, Bristol, Conn.

WATER BOTTLES.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

WAX.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Klipstein, A., & Company, New York.
Vanderbilt, R. T., Co. New York.

WAX—Montan.
Klipstein, A., & Company, New York.
Wishnick-Tumpeer, Inc., New York.

WHEELS—Elastic Emery.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
United States Rubber Co., New York.

WHITING.
Harshaw, Fuller & Goodwin Co.
Klipstein, A., & Co., New York.
Roessler & Hasslacher Chemical Co., New York.
Southwark Manufacturing Co., Camden, N. J.
Taintor Co., The, New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt R. T., & Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.

WINDERS.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.

WIRE—Lead Covered.
Wishnick-Tumpeer, Inc., New York.
United States Rubber Co., New York.

WIRE—Rubber Insulated.
United States Rubber Co., New York.

WIRE WRAPPING MACHINES.
Terkelsen Machine Co., Boston, Mass.

WOOD FLOUR.
Grasselli Chemical Co., Cleveland, O.
Klipstein, A., & Company, New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

WRAPPING MACHINES—Cloth.
Terkelsen Machine Co., Boston, Mass.

ZINC OXIDE.
Grasselli Chemical Co., Cleveland, O.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Klipstein, A., & Co., New York.
New Jersey Zinc Sales Co., New York.
Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer, Inc., New York.

ZINC SUBSTITUTE.
Klipstein, A., & Company, New York.

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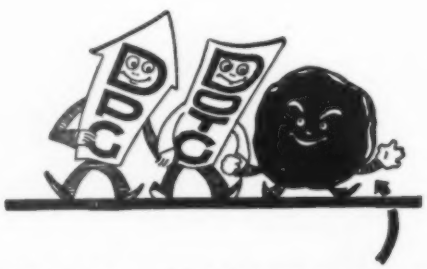

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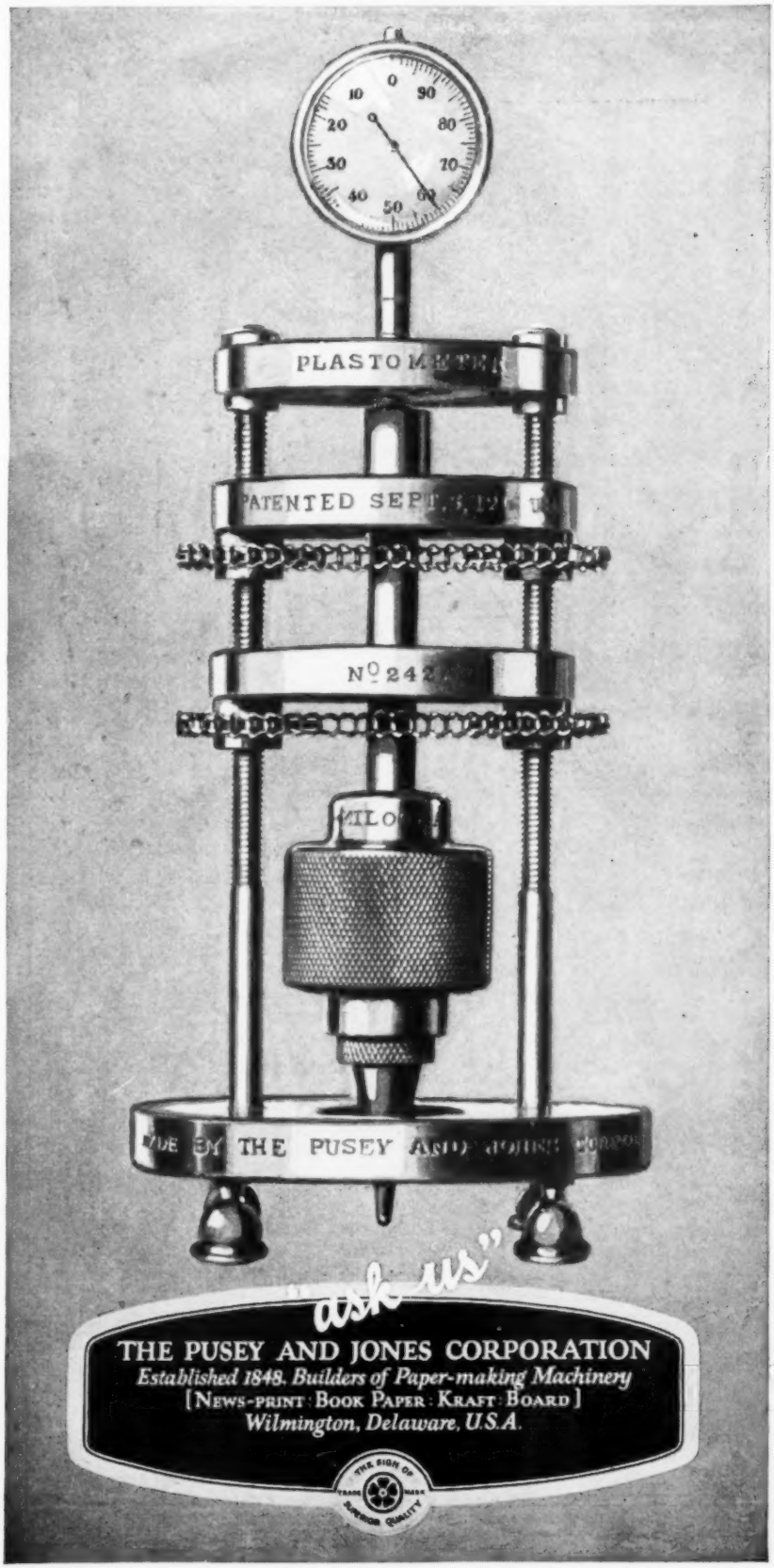
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4. Diamond Rubber Company
5. The Miller Rubber Company
6. Hood Rubber Company
7. Revere Rubber Company
8. Boston Rubber Shoe Company
9. Goodyear Tire & Rubber Co.
10. American Rubber Mfg. Co.
11. Bowers Rubber Works
12. Underwood Typewriter Co.
13. Firestone Tire & Rubber Co.
14. Federal Rubber Company
15. Peerless Rubber Mfg. Company
16. Quaker City Rubber Company
17. Lee Tire & Rubber Company
18. Canadian Consolidated Rubber Co., Ltd.
19. Cincinnati Rubber Mfg. Co.
20. India Rubber Society
21. John E. Thropp's Sons Company
22. Pennsylvania Rubber Company
23. Elkhart Rubber Works
24. Gutta Percha & Rubber, Ltd.
25. Hardman Rubber Corporation
26. The Doss Rubber & Tube Co.
27. United States Rubber Company
28. N. Y. Belting & Packing Co.
29. American Belting & Hose Co.
30. The Mechanical Rubber Co.
31. The India Tire & Rubber Co.
32. The Amazon Rubber Company
33. Mechanical Rubber Mfg. Co.
34. The Denman-Meyers Cord Tire Company
35. Columbus Tire & Rubber Co.
36. India Rubber, Gutta Percha & Telegraph Works Co., Ltd.
37. Research Assoc. of British Rubber & Tire Mfg.
38. Thermoid Rubber Company
39. Clayton Rubber Company
40. Fisk Rubber Company
41. The New Liverpool Rubber Company, Ltd.
42. Cambell, Achanach & Co.
43. Dunlop Tire & Rubber Goods Company
44. Dominion Rubber Co., Ltd.
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ONE day last month one of our customers found himself in the midst of serious trouble with his product. Although he is a large manufacturer and has a well equipped physical and chemical laboratory, he was glad to welcome outside assistance. Our laboratory and production departments made a study for him and within a few days supplied a comprehensive report. He acknowledges our efforts as follows:

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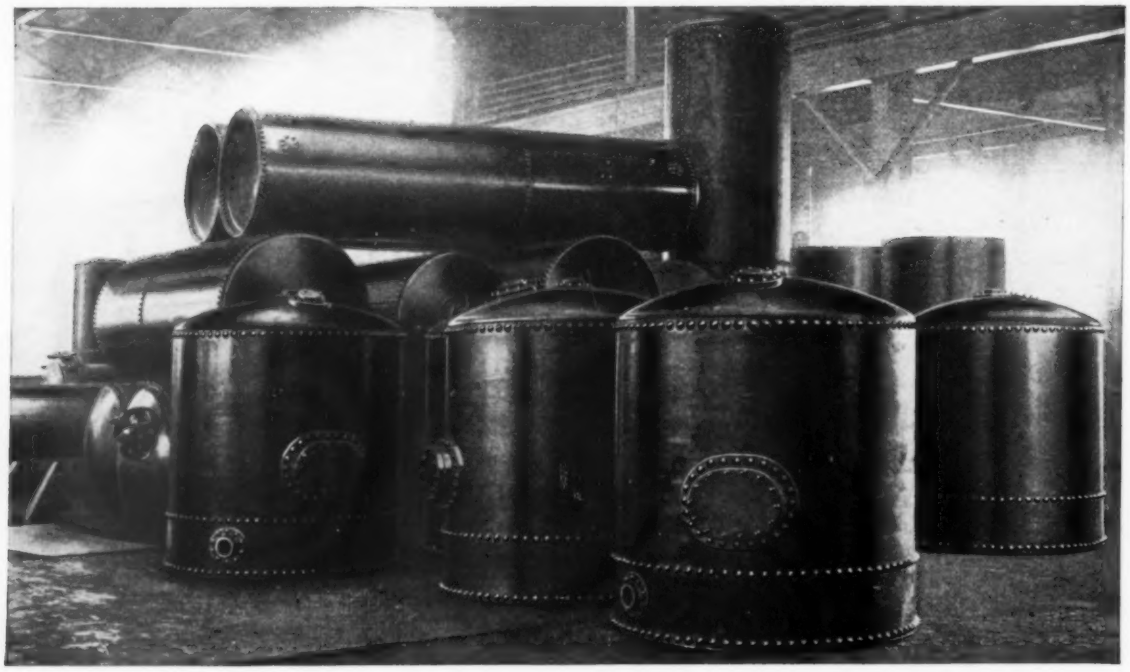

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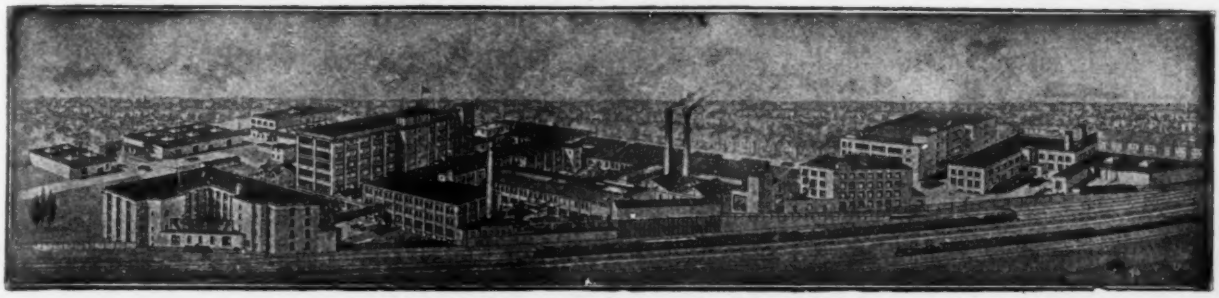

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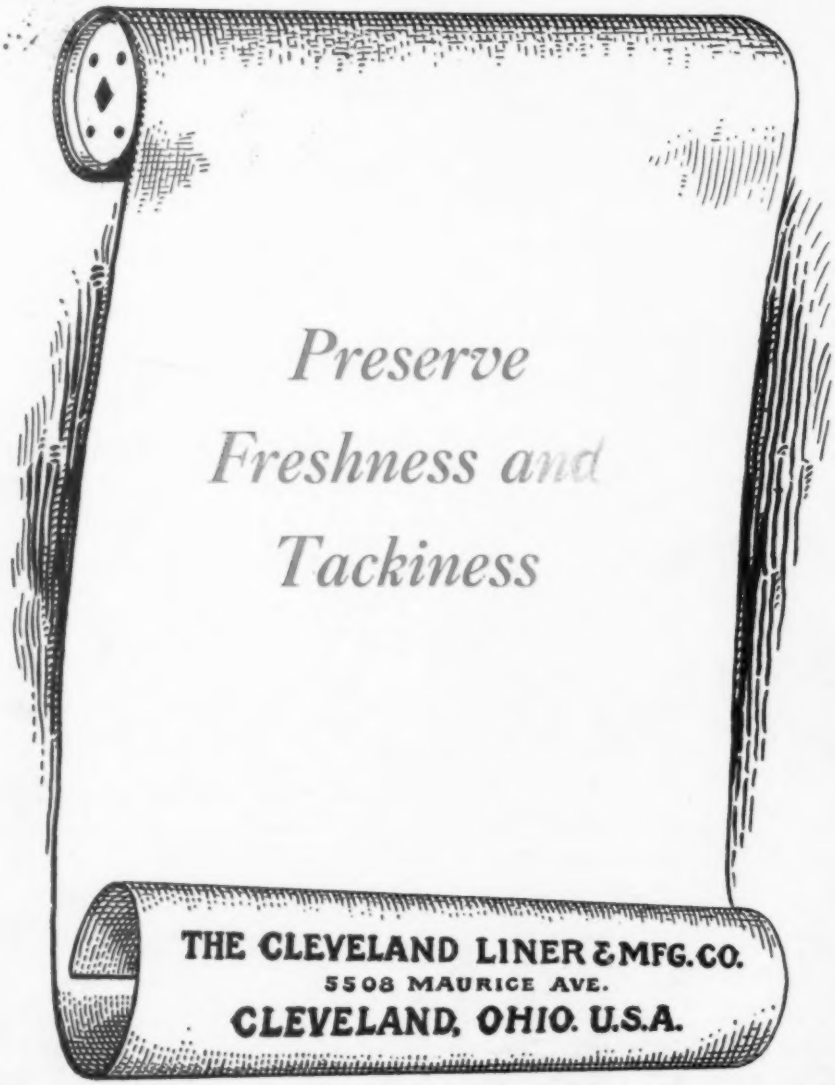

Preserve
Freshness and
Tackiness

THE CLEVELAND LINER & MFG. CO.
5508 MAURICE AVE.
CLEVELAND, OHIO. U.S.A.

BLUE PROCESSED LINER

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